ADF&G TECHNICAL DATA REPORT NO. 133
(Limited Distribution)

STATE OF ALASKA
Bill Sheffield, Governor

ABUNDANCE, AGE, SEX, AND SIZE OF SALMON (Oncorhynchus sp.) CATCHES AND ESCAPEMENTS IN THE KUSKOKWIM AREA, 1983

By:
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January 1985

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Don W. Collinsworth
Commissioner

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The primary purpose of these reports is presentation of data. Description of programs and data collection methods is included only to the extent required for interpretation of the data. Analysis is generally limited to that necessary for clarification of data collection methods and interpretation of the basic data. No attempt is made in these reports to present analysis of the data relative to its ultimate or intended use.

Data presented in these reports is intended to be final, however, some revisions may occasionally be necessary. Minor revision will be made via errata sheets. Major revisions will be made in the form of revised reports.

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FOREWORD

This presentation of Kuskokwim Area salmon statistics is the second in a series of annual reports which will summarize available information regarding composition and abundance of inshore returns. The primary objective of this publication is to present the basic biological information collected by the Alaska Department of Fish and Game in 1983 during ongoing research and management-related investigations on salmon in the Kuskokwim, Quinhagak, and Goodnews Bay Districts. Included are commercial and subsistence catch data, available escapement estimates, and age and size composition by sex. Detailed knowledge of these population attributes is required in order to accurately evaluate and manage for stock-specific production. Unfortunately, while Kuskokwim area catch information is largely known, the considerable number of spawning streams scattered throughout the immense Kuskokwim Bay and River drainages has always precluded complete collection of escapement data. No attempt has been made to estimate total drainage escapements from the limited available spawner counts, nor to allocate catches to streams of origin. This document is, therefore, intended to serve only as a first step toward total run documentation and eventual stock-specific production evaluation.

ABSTRACT

Commercial and subsistence gillnet fisheries in the Kuskokwim area of western Alaska harvested all five North American species of Pacific salmon *(Oncorhynchus* sp.*)* in 1983. A total of 163,834 chinook *(O. tshawytscha)*, 90,834 sockeye *(O. nerka)*, 255,973 coho *(O. kisutch)*, 379 pink *(O. gorbuscha)*, and 510,471 chum *(O. keta)* salmon was caught in the Kuskokwim River and in marine waters at the mouths of the Kanektok and Goodnews Rivers. Kuskokwim River commercial and subsistence-caught chinook salmon were mainly (60%) age 6_2. The major age classes represented for three of the other species were: sockeye, 61% age 5_2; coho, 90% age 4_3; and chum salmon, 51% age 5_1. Chinook salmon harvested in the Quinhagak District were primarily age 6_2 (64%). Predominant age classes in three of the other four species were: sockeye, 51% age 4_2; coho, 96% age 4_3, and chum salmon, 60% age 4_1. Goodnews District chinook salmon were mainly age 6_2 (74%), and the most well represented age group of sockeye salmon (5_2) comprised 49% of the total. Coho salmon were nearly all age 4_3 (99%), and chum salmon were primarily age 5_1 (53%). Escapements of salmon to all three drainages were sampled for age, sex, and size. Escapement age compositions were similar in most instances to those of respective commercial catches.

KEY WORDS: Pacific salmon *(Oncorhynchus)*, catch allocation, chinook salmon, chum salmon, sockeye salmon, coho salmon, age classification, fishery synopsis.

INTRODUCTION

The Kuskokwim area includes five fishing districts located in or adjacent to three unique river systems (Figure 1). Three separate fishing districts are located within the confines of the mainstem Kuskokwim River (335-10, 20, 30), and the other two districts are located near the mouths of the Kanektok (335-40) and Goodnews Rivers (335-50). All three river systems support major annual runs of chinook salmon *(Oncorhynchus tschawytscha)*, chum salmon *(O. keta)*, and coho salmon *(O. kisutch)*. In addition, the Kanektok and Goodnews Rivers support significant annual runs of sockeye salmon *(O. nerka)* and even-year runs of pink salmon *(O. gorbuscha)*. The Kuskokwim River also occasionally support significant runs of sockeye salmon, though catches of this species are largely incidental.

Nearly all of the commercial fishing occurs in the Lower Kuskokwim River District (W-1 or 335-10), the Quinhagak District (W-4 or 335-40), and the Goodnews Bay District (W-5 or 335-50). The Alaska Department of Fish and Game (ADF&G) presently conducts a number of activities to collect biological information on the salmon populations returning to these areas. Of major importance are programs designed to collect information concerning: (1) the magnitude and timing of the commercial and subsistence harvest in each fishing district; (2) the age, size, and sex composition of each commercial catch components; (3) the timing and either absolute or relative magnitude of selected major spawning populations; and (4) the age, size, and sex composition of some of the enumerated spawning populations. By documenting annual run characteristics, the ADF&G hopes to improve and standardize the salmon data base, and thereby facilitate management of discrete stocks within the production areas. Few studies to date have concentrated on critically evaluating Kuskokwim area production because of limited historic escapement and stock-specific catch data.

Available annual data presently include commercial catch statistics, subsistence harvest estimates, some escapement estimates, and age, sex, and size information. Commercial catch statistics are formally published by the ADF&G, Division of Commercial Fisheries (CF). Subsistence harvest estimates are generated by CF from information collected during autumn surveys, and are presented in the ADF&G Kuskokwim Area Annual Management Report series (ADF&G, In prep.). All available escapement information is maintained in a computerized stream catalog. Historic age, sex, and size data have been reported informally in various A-Y-K (Arctic-Yukon-Kuskokwim) reports.

This report is a comprehensive presentation of currently available information on the abundance and age, size, and sex composition of the Kuskokwim Area salmon runs in 1983. Catch and escapement information is apportioned by age class and sex within each species. Standard error and sample size statistics are also included in this report. In those instances where site-specific information is completely unavailable, abundance estimates are apportioned by average age, sex, and size data from segments of the population sampled in other locations. It should be noted that numerous small populations exist about which little or no information is available.

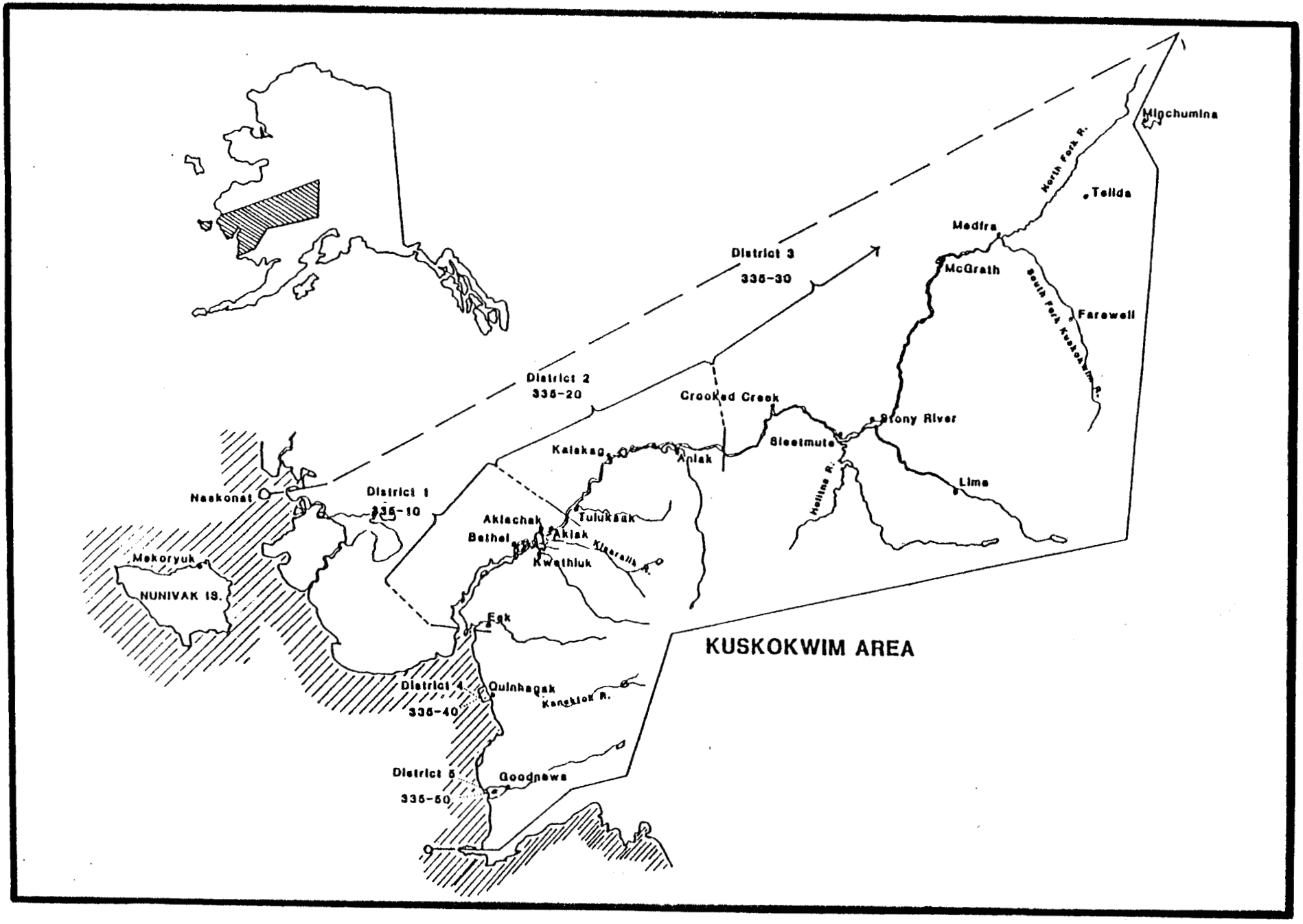

Figure 1. Map of the Kuskokwim area showing commercial fishing district boundaries.

METHODS

Study Area Description

The Kuskokwim area consists of all waters draining into the area between Cape Newenham and Naskonat Peninsula, including Nunivak Island (Figure 1). Commercial fishing occurs in two separate fishing districts in the mainstem Kuskokwim River and in marine waters at the mouths of both the Kanektok and Goodnews Rivers. The Lower Kuskokwim River District (W-1) extends approximately 78 miles (125 km) from the lower end of Eek Island upriver to Bethel during most of the summer when chum and sockeye salmon predominate, and it extends an additional 44 miles (71 km) upriver to Mishevik Slough both early and late in the season when chinook and coho salmon are respectively more prevalent. The Middle Kuskokwim River District (W-2) extends from Mishevik Slough 123 miles (198 km) upriver to the mouth of the Kolmakof River. District 4 is located near the village of Quinhagak at the mouth of the Kanektok River and extends along the ocean shoreline for roughly 7 miles (12 km) from the mouth of Oyak Creek southward to the mouth of the Arolik River. District 5 is located within the confines of Goodnews Bay at the mouth of the Goodnews River.

Drift and set gillnets are the only legal commercial fishing gear allowed in the Kuskokwim area, although most commercial fishing has been conducted with drift gillnets in recent years. The maximum aggregate net length is 50 fathoms (90 m), and salmon may be taken in nets with stretch mesh sizes of not more than six inches (15 cm) after 25 June in the Kuskokwim River. Nets with mesh sizes larger than six inches (15 cm) may not be deeper than 35 meshes, and those with mesh sizes of six inches (15 cm) or less may not be deeper than 45 meshes. All commercial fishing in both the Quinhagak and Goodnews Bay Districts is limited to 50 fathom (90 m) six-inch (15 cm) stretch mesh gillnets or less. Subsistence fishing commonly occurs with the same gillnets used for commercial purposes. The gillnet size most commonly used to intentionally harvest chinook salmon in the Kuskokwim River is 8-inch (20 cm) stretch mesh, whereas 5 1/2-inch (14 cm) stretch mesh is the standard for all other commercial and subsistence salmon fishing in the Kuskokwim area.

Abundance Data

All harvest data presented in this report were compiled by ADF&G in Bethel, Alaska. The commercial harvest data were tabulated from fish tickets, and are considered preliminary until final catch figures are formally published by ADF&G. Final harvest figures are not expected to differ from the preliminary values by more than 1%. All historic commercial harvest comparisons were made based upon statistics published by ADF&G (1982).

Subsistence harvest data were estimated from door to door subsistence surveys in 11 selected villages throughout the Kuskokwim management area in 1983. Interviews included retrieving ADF&G-supplied catch calendars and any additional pertinent verbal information. Surveyed villages were censused, and relative fishery participation and harvest data from interviewed families were linearly expanded for the estimated number of non-respondent families. Record keeping is voluntary, however, and there is little quality control during data collection in-season. Consequently, reported subsistence harvests are not as precise as commercial harvest information.

Escapement data presented in this report were collected in a variety of ways. These include visual observation from both a tower and a weir, hydroacoustic sensing by side-scanning sonar, and peak abundance aerial survey assessment. Of these, only adjusted weir counts on the Holitna River and expanded tower counts on the middle fork of the Goodnews River are considered to represent total escapements. However, major portions of the chinook, sockeye, and chum salmon runs were missed when Ignatti weir was rendered inoperable on two separate occasions, so the estimated total escapements of those species were calculated based on historic average entry patterns and the actual weir counts generated in 1983 (Schneiderhan 1984a). Sonar appears to accurately reflect fish presence within the ensonified water column, and is used to estimate fish passage on both the Kanektok and Aniak Rivers (Schultz and Williams 1984; Schneiderhan 1984b). Other escapement information presented are from aerial stream surveys during presumed periods of peak abundance under fair to good survey conditions. While it is not currently feasible to survey all of the small spawning tributaries within the Kuskokwim drainage, an attempt was made to census all of the known major salmon spawning concentrations to provide relative escapement indices for these systems.

Age, Sex, and Length

All salmon species except pink salmon were sampled for age, sex, and length. Age was determined from scale samples taken in the preferred area on the left side of the fish, approximately two rows above the lateral line and on a diagonal between the posterior end of the dorsal fin and anterior end of the anal fin (INPFC 1963). All ages are reported using Gilbert-Rich[1] notation signifying total and freshwater ages. Sex was determined from external morphological characteristics except for commercially caught chinook salmon, many of which were sampled by examination of the gonads. All reported lengths were taken mid-eye to fork of tail.

Samples were collected from as many catch and escapement time and area strata as practical. Where possible, samples were collected throughout the duration of the salmon migration. Sampling effort was distributed throughout the period of commercial harvest of chinook, sockeye, coho, and chum salmon in Districts 1, 4, and 5 and on the escapements of all species enumerated both at Ignatti weir and at the Aniak River sonar project. Samples from the Goodnews and Kanektok River system escapements were collected from spawning ground carcass surveys. Subsistence catches were not sampled.

Fishery and escapement age, sex, and size compositions were estimated from samples collected. Minimum sample sizes necessary to stratify age and sex composition through time were calculated. The number of samples required by species were those necessary to attain a level of 10% precision and 5% accuracy based on the number of predominant age classes typically present. The age, size, and sex characteristics of the subsistence harvests in all districts and also those of the District 2 commercial harvest were estimated by directly apportioning the nearest district commercial catch samples. This was possible because the gear

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[1] Gilbert-Rich Formula - Total years of life at maturity (large type) - year of life at outmigration from fresh water (subscript).

used to harvest salmon for subsistence purposes was largely the same as that used for commercial fishing.

RESULTS AND DISCUSSION

Harvest Data

A total of 163,834 chinook, 90,834 sockeye, 255,973 coho, 379 pink, and 510,471 chum salmon was caught during commercial and subsistence salmon fishing activities in the Kuskokwim area in 1983 (Table 1). Total chinook salmon harvest was the largest ever documented, while the small (sockeye, pink, and chum) salmon harvest was only slightly (8%) below the recent 5-year average. Area-wide commercial harvests accounted for 93,676 chinook, 90,834 sockeye, 284,389 coho, 379 pink, and 306,554 chum salmon. This represented a record catch of chinook salmon, the third largest sockeye salmon harvest on record, and below normal catches of coho and chum salmon. The largest commercial catches of sockeye, coho, pink, and chum salmon were reported from District 1 (Table 2). Relatively low numbers of all species were caught in District 2, with chinook and chum salmon predominating (Table 3). Peak chinook salmon catches occurred in District 4 (Table 4), and significant catches of chinook, sockeye, and coho salmon were recorded in District 5 (Table 5). The total estimated subsistence harvest of chinook salmon (70,158 fish) was the second largest on record, and the estimated chum salmon harvest (203,917) was also well above average (Table 1).

Age, Sex, and Length Composition for the Kuskokwim Area

Composite average age and sex composition estimates for all salmon harvested both in the Kuskokwim River and in Kuskokwim Bay (excluding those taken at Mekoryuk) were calculated. Most of the 180,050 chinook salmon were age 6_2 (60%), and just over half (56%) were males (Table 6). The bulk of the 90,834 sockeye salmon caught were age 5_2 (61%) and age 4_2 (25%), and just over half (57%) were females (Table 7). Nearly all of the 255,978 coho salmon caught were age 4_3 (90%) with a slight predominance (55%) of males, and all coho salmon sampled were one-ocean fish (Table 8). The 510,471 chum salmon caught in the area were primarily age 5_1 (51%) and age 4_1 (46%), and nearly half (48%) were males (Table 9).

Kuskokwim River

Age, sex, and size statistics and escapements for the Kuskokwim River system were calculated and are presented by category.

District (W-1) Commercial Harvest:

The majority of the 30,343 chinook salmon commercially harvested in District 1 were age 6_2 (52%) and age 4_2 (21%), while age 5_2 fish comprised a smaller portion (19%) of the catch (Table 10). Males comprised the largest proportion of the total catch (63%); most of the males caught were age 4_2 (21%) and age 6_2 (24%). The age and sex compositions of the chinook salmon harvest shifted from primarily age 6_2 fish (71%) and an even sex ratio during the unrestricted mesh season (13-16 June) to fish of both age 6_2 (37%) and age 4_2 (35%) and mostly males during the remainder of the season (20 June - 1 August). The largely incidental but record

Table 1. Total harvest of Kuskokwim area salmon by district and species, 1983.

COMMERCIAL CATCH:

District	Chinook	Sockeye	Coho	Pink	Chum
Lower Kuskokwim (W-1)	30,343	67,681	195,816	211	267,936
Middle Kuskokwim (W-2)	2,831	1,174	471	0	8,762
Quinhagak (W-4)	46,385	10,263	32,442	168	23,090
Goodnews Bay (W-5)	14,117	11,716	19,660	0	6,766
Subtotal	93,676	90,834	248,389	379	306,554

SUBSISTENCE CATCH:

Area	Families[1]	Chinook	Sockeye	Coho	Pink	Chum
Kuskokwim R.[2]		68,316	---	7,507	---	199,857
Quinhagak Area	60	776	---	77	---	2,542
Goodnews Bay	37	1,066	---	---	---	1,518
Subtotal		70,158	---	7,584	---	203,917
Kuskokwim Area Total[3]		163,834	90,834	255,973	379	510,471

[1] Estimated total number of fishing families.

[2] Includes McGrath and Nikolai.

[3] Does not include Mekoryuk on Nunivak Island.

Table 2. Lower Kuskokwim District (W-1) commercial catch of salmon by species and date, 1983.

Date	Hrs.	Fishermen[1]	CATCH Chinook	Sockeye	Coho	Pink	Chum
6/13	6	489	7,445	114	0	0	829
6/16	6	450	5,961	156	0	0	976
6/20	6	474	4,776	3,289	0	0	28,915
6/23	6	450	3,287	4,807	0	0	24,625
6/27	6	446	2,566	10,465	0	3	44,802
6/30	6	547	2,359	12,490	0	7	55,209
7/04	6	443	1,213	24,540	0	15	46,176
7/07	6	496	1,202	7,286	0	37	36,965
7/11	6	466	633	3,001	0	55	20,560
8/01	6	377	238	478	9,767	35	4,041
8/04	6	430	237	272	15,389	10	2,580
8/08	6	383	130	444	34,541	8	1,322
8/11	6	485	96	146	35,268	11	534
8/15	6	462	64	71	24,072	6	148
8/18	6	408	56	52	22,822	8	111
8/22	6	388	53	39	34,918	8	88
8/26	6	323	27	31	19,039	8	55
TOTAL	102	679	30,343	67,681	195,816	211	267,936

[1] Number of fishermen making at least one delivery.

Table 3. Middle Kuskokwim District (W-2) commercial catch of salmon by species and date, 1983.

			CATCH				
Date[1]	Hrs.	Fishermen[2]	Chinook	Sockeye	Coho	Pink	Chum
6/16	6	14	510	13	0	0	165
6/20	6	28	746	86	0	0	2,069
6/23	6	34	820	338	0	0	2,154
6/27	6	33	755	736	0	0	4,276
8/11	6	9	0	1	471	0	98
8/15	6	0	0	0	0	0	0
8/18	6	0	0	0	0	0	0
TOTAL	42	43	2,831	1,174	471	0	8,762

[1] Starting date of each commercial opening.

[2] Number of fishermen making at least one delivery.

Table 4. Quinhagak District (W-4) commercial catch of salmon by species and date, 1983.

Date	Hrs.	Fishermen	CATCH Chinook	Sockeye	Coho	Pink	Chum
6/13	12	86	7,720	14	0	0	84
6/16	12	134	7,835	150	0	0	787
6/23	12	105	11,652	343	0	1	1,103
6/27	12	125	9,711	543	0	1	1,855
7/04	12	76	2,727	627	0	4	2,333
7/07	12	80	1,521	1,211	0	9	3,069
7/11	12	81	1,297	2,610	0	19	2,966
7/14	12	101	1,351	1,605	0	27	3,080
7/18	12	125	845	1,321	3	37	3,022
7/22	12	63	629	799	12	58	2,219
7/25	12	0	0	0	0	0	0
7/27	12	10	114	150	28	3	459
7/29	12	17	103	126	152	2	475
8/01	12	54	153	157	566	5	429
8/03	12	63	160	137	824	2	580
8/05	12	57	141	150	1,313	2	357
8/08	12	0	0	0	0	0	0
8/10	12	64	125	69	2,429	0	108
8/12	12	72	74	49	2,857	0	53
8/15	12	54	43	42	1,603	0	23
8/17	12	83	66	71	3,633	0	50
8/19	12	68	51	19	4,769	0	14
8/22	12	71	33	32	2,515	0	18
8/25	12	81	16	28	3,892	0	5
8/29	12	58	7	7	3,504	0	0
9/01	12	46	10	0	2,269	0	1
9/05	12	23	1	0	901	0	0
9/08	12	28	0	3	1,262	0	0
TOTAL	318	226	46,385	10,263	32,442	168	23,090

[1] Starting date of each commercial opening.

[2] Number of fishermen making at least one delivery.

Table 5. Goodnews District (W-5) commercial catch of salmon by species and date, 1983.

Date	Hrs.[1]	Fishermen[2]	CATCH				
			Chinook	Sockeye	Coho	Pink	Chum
6/13	12	28	1,252	27	0	0	10
6/16	12	31	1,096	125	0	0	89
6/20	12	62	2,642	535	0	0	341
6/27	12	37	3,944	952	0	0	728
7/04	12	36	2,301	1,598	0	0	1,626
7/07	12	37	1,119	2,057	0	0	1,357
7/11	12	37	308	1,817	0	0	742
7/14	12	34	289	1,039	0	0	601
7/18	12	27	217	559	0	0	488
7/22	12	27	228	614	0	0	362
7/25	12	0	0	0	0	0	0
7/27	12	25	122	356	7	0	119
7/29	12	17	157	630	5	0	166
8/01	12	21	78	389	56	0	39
8/03	12	22	102	396	111	0	51
8/05	12	11	54	207	126	0	21
8/08	12	0	0	0	0	0	0
8/10	12	28	78	146	858	0	15
8/12	12	30	47	131	1,626	0	0
8/15	12	32	21	35	1,225	0	0
8/17	12	29	13	16	1,895	0	8
8/19	12	29	14	34	2,573	0	3
8/22	12	37	17	16	2,854	0	0
8/25	12	41	13	23	2,591	0	0
8/29	12	25	3	8	1,350	0	0
9/01	12	31	0	6	1,819	0	0
9/05	12	31	0	0	1,721	0	0
9/08	12	23	2	0	843	0	0
TOTAL	336	79	14,117	11,716	19,660	0	6,766

[1] Starting date of each commercial opening.

[2] Number of fishermen making at least one delivery.

Table 6. Total harvest of Kuskokwim area chinook salmon by age and sex, 1983[1].

	AGE GROUP[2]									
	32	42	51	52	62	63	72	73	83	TOTAL
MALES										
NUMBER	2,046	35,293	39	18,404	41,323	49	2,830	348	0	100,332
PERCENT	1.14	19.60	0.02	10.22	22.95	0.03	1.57	0.19	0.00	55.72
FEMALES										
NUMBER	0	86	0	8,652	66,058	0	4,625	248	49	79,718
PERCENT	0.00	0.05	0.00	4.81	36.68	0.00	2.57	0.14	0.03	44.28
SEXES COMBINED										
NUMBER	2,046	35,379	39	27,056	107,381	49	7,455	596	49	180,050
PERCENT	1.14	19.65	0.02	15.03	59.63	0.03	4.14	0.33	0.03	100.00

[1] Combined commercial and subsistence harvest from all districts, including Kuskokwim Bay.

[2] 32, 42, etc. are computer-derived numbers for Gilbert-Rich Formula age designation (3_2, 4_2, etc.) where the first digit represents the total years of life at maturity (large type) and year of life at outmigration from fresh water (subscript).

Table 7. Total harvest of Kuskokwim area sockeye salmon by age and sex, 1983[1].

	AGE GROUP									
	31	41	42	51	52	53	62	63	74	TOTAL
MALES										
NUMBER	0	370	10,829	197	22,621	3,318	828	1,124	174	39,461
PERCENT	0.00	0.41	11.92	0.22	24.95	3.65	0.91	1.24	0.19	43.44
FEMALES										
NUMBER	174	2,059	11,651	247	33,066	2,146	755	1,275	0	51,373
PERCENT	0.19	2.27	12.83	0.27	36.41	2.36	0.83	1.40	0.00	56.56
SEXES COMBINED										
NUMBER	174	2,429	22,480	444	55,687	5,464	1,583	2,399	174	90,834
PERCENT	0.19	2.68	24.75	0.49	61.31	6.01	1.74	2.64	0.19	100.00

[1] Combined commercial and subsistence harvest from all districts, including Kuskokwim Bay.

Table 8. Total harvest of Kuskokwim area coho salmon by age and sex, 1983[1] [2].

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	12,639	124,876	2,426	109,436
PERCENT	4.94	48.78	0.95	54.67
FEMALES				
NUMBER	8,277	105,454	2,303	116,037
PERCENT	3.23	41.20	0.90	45.33
SEXES COMBINED				
NUMBER	20,916	230,333	4,729	255,978
PERCENT	8.17	89.98	1.85	100.00

[1] Combined commercial and subsistence harvest from all districts, including Kuskokwim Bay.

[2] Includes 5 coho salmon caught during subsistence fishing activities in Goodnews Bay.

Table 9. Total harvest of Kuskokwim area chum salmon by age and sex, 1983[1] [2].

	AGE GROUP						
	31	41	51	52	61	62	TOTAL
MALES							
NUMBER	1,823	104,537	132,362	0	4,703	187	243,612
PERCENT	0.36	20.48	25.91	0.00	0.92	0.04	47.71
FEMALES							
NUMBER	3,236	132,712	129,361	53	1,497	0	266,859
PERCENT	0.63	26.01	25.35	0.01	0.29	0.00	52.29
SEXES COMBINED							
NUMBER	5,059	237,249	261,723	53	6,200	187	510,471
PERCENT	0.99	46.49	51.26	0.01	1.21	0.04	100.00

[1] Combined commercial and subsistence harvest from all districts, including Kuskokwim Bay.

[2] Includes small numbers of sockeye and pink salmon.

Table 10. Lower Kuskokwim District (W-1) commercial catch of chinook salmon, age and length (mm) by sex, 1983.

PERIOD 1 (6/13/83)	AGE GROUP							
	42	52	62	63	72	73	83	TOTAL
MALES								
NUMBER	253	832	2,645	15	238	104	0	4,087
PERCENT	3.40	11.20	35.50	0.20	3.20	1.40	0.00	54.90
AV LENGTH	566.24	746.37	861.61	830.00	920.31	812.57	0.00	821.94
STD ERROR	12.07	6.95	5.35	0.00	17.09	20.58	0.00	7.17
SAMP SIZE	17	56	178	1	16	7	0	275
FEMALES								
NUMBER	0	238	2,645	0	386	74	15	3,358
PERCENT	0.00	3.20	35.50	0.00	5.20	1.00	0.20	45.10
AV LENGTH	0.00	825.00	865.99	0.00	920.46	860.00	810.00	868.97
STD ERROR	0.00	14.85	3.92	0.00	12.47	33.78	0.00	6.35
SAMP SIZE	0	16	178	0	26	5	1	226
SEXES COMBINED								
NUMBER	253	1,070	5,290	15	624	178	15	7,445
PERCENT	3.40	14.40	71.00	0.20	8.40	2.40	0.20	100.00
AV LENGTH	566.24	763.84	863.80	830.00	920.40	832.33	810.00	843.15
STD ERROR	12.07	8.71	4.63	0.00	14.23	26.08	0.00	6.80
SAMP SIZE	17	72	356	1	42	12	1	501

-Continued-

Table 10. Lower Kuskokwim District (W-1) commercial catch of chinook salmon, age and length (mm) by sex, 1983 (continued).

PERIOD 2 (6/16/83)	AGE GROUP						
	32	42	51	52	62	72	TOTAL
MALES							
NUMBER	12	152	12	747	1,900	152	2,975
PERCENT	0.20	2.50	0.20	12.50	32.00	2.50	49.90
AV LENGTH	458.00	546.46	838.00	732.28	855.02	934.62	810.92
STD ERROR	0.00	12.36	0.00	7.96	6.42	23.01	7.97
SAMP SIZE	1	13	1	64	163	13	255
FEMALES							
NUMBER	0	0	0	280	2,403	303	2,986
PERCENT	0.00	0.00	0.00	4.70	40.30	5.10	50.10
AV LENGTH	0.00	0.00	0.00	783.04	854.76	908.19	853.46
STD ERROR	0.00	0.00	0.00	10.80	3.62	12.93	5.23
SAMP SIZE	0	0	0	24	206	26	256
SEXES COMBINED							
NUMBER	12	152	12	1,027	4,303	455	5,961
PERCENT	0.20	2.50	0.20	17.20	72.30	7.60	100.00
AV LENGTH	458.00	546.46	838.00	746.12	854.87	917.00	832.23
STD ERROR	0.00	12.36	0.00	8.74	4.85	16.29	6.59
SAMP SIZE	1	13	1	88	369	39	511

-Continued-

Table 10. Lower Kuskokwim District (W-1) commercial catch of chinook salmon, age and length (mm) by sex, 1983 (continued).

PERIOD 3 (6/20/83-8/01/83)	AGE GROUP					
	32	42	52	62	72	TOTAL
MALES						
NUMBER	544	5,850	2,721	2,789	204	12,108
PERCENT	3.20	34.50	16.10	16.50	1.20	71.50
AV LENGTH	516.87	546.37	700.20	873.59	950.67	661.80
STD ERROR	14.87	5.08	10.77	11.41	59.11	9.17
SAMP SIZE	8	86	40	41	3	178
FEMALES						
NUMBER	0	0	1,088	3,469	272	4,829
PERCENT	0.00	0.00	6.40	20.50	1.60	28.50
AV LENGTH	0.00	0.00	781.81	865.29	899.25	848.39
STD ERROR	0.00	0.00	18.19	9.78	25.70	12.57
SAMP SIZE	0	0	16	51	4	71
SEXES COMBINED						
NUMBER	544	5,850	3,809	6,258	476	16,937
PERCENT	3.20	34.50	22.50	37.00	2.80	100.00
AV LENGTH	516.87	546.37	723.52	868.99	921.29	715.00
STD ERROR	14.87	5.08	12.89	10.51	40.02	10.14
SAMP SIZE	8	86	56	92	7	249

-Continued-

Table 10. Lower Kuskokwim District (W-1) commercial catch of chinook salmon, age and length (mm) by sex, 1983 (continued).

PERIODS COMBINED

	AGE GROUP									
	32	42	51	52	62	63	72	73	83	TOTAL
MALES										
NUMBER	556	6,255	12	4,300	7,334	15	594	104	0	19,170
PERCENT	1.83	20.63	0.01	14.17	24.17	0.05	1.96	0.34	0.00	63.16
AV LENGTH	515.60	547.18	838.00	714.71	864.46	830.00	934.40	812.57	0.00	719.07
STD ERROR	13.22	6.92	0.00	8.31	6.46	0.00	23.43	20.58	0.00	7.93
SAMP SIZE	9	116	1	160	382	1	32	7	0	708
FEMALES										
NUMBER	0	0	0	1,606	8,517	0	961	74	15	11,173
PERCENT	0.00	0.00	0.00	5.30	28.07	0.00	3.17	0.25	0.05	36.84
AV LENGTH	0.00	0.00	0.00	788.42	862.54	0.00	910.59	860.00	810.00	855.93
STD ERROR	0.00	0.00	0.00	14.07	4.46	0.00	13.63	33.78	0.00	6.62
SAMP SIZE	0	0	0	56	435	0	56	5	1	553
SEXES COMBINED										
NUMBER	556	6,255	12	5,906	15,851	15	1,555	178	15	30,343
PERCENT	1.83	20.63	0.01	19.47	52.24	0.05	5.13	0.59	0.05	100.00
AV LENGTH	515.60	547.18	838.00	734.75	863.43	830.00	919.68	832.29	810.00	769.46
STD ERROR	13.22	6.92	0.00	9.80	5.39	0.00	17.19	26.08	0.00	7.35
SAMP SIZE	9	116	1	216	817	1	88	12	1	1,261

catch of 67,681 sockeye salmon consisted mostly of age 5_2 fish (67%) with females predominating at 59% (Table 11). The 195,816 coho salmon commercially landed were typically age 4_3 (88%) and just over half (56%) were males (Table 12). All coho salmon sampled were one-ocean fish, and the age and sex compositions did not change significantly within the period of data collection (1 - 26 August). Nearly all of the 267,936 chum salmon commercially caught were age 5_1 (52%) or age 4_1 (46%), and were evenly split between males and females (Table 13). Additionally, the age and sex compositions of the chum salmon harvest shifted from predominantly age 5_1 (65%) to age 4_1 (62%) and from mostly males (60%) to mostly females (55%) by 6 July.

District (W-2) Commercial Harvest:

No sampling was conducted upon the limited catches observed in the Middle Kuskokwim District (W-2). Therefore, the age, length, and sex compositions of the 2,831 chinook (Table 14), 1,174 sockeye (Table 15), 471 coho (Table 16), and 8,762 chum salmon (Table 17) were apportioned directly from composition estimates calculated for District 1 commercial catches. While some general sifting of larger fish probably occurred through fishing activities in the Kuskokwim River below District 2, the methods employed and gillnet mesh size used were similar throughout the area, so apportioned catches should closely approximate the actual composition of the catches.

Subsistence Harvest:

Subsistence catches along the Kuskokwim River were not sampled; the age, length, and sex information presented is taken directly from the District 1 commercial catch samples. This was again reasonable because much of the gear used to harvest salmon for subsistence purposes along the Kuskokwim River was similar or identical to that used for commercial salmon fishing. Estimated catches of 68,316 chinook (Table 18), 7,507 coho (Table 19), and 199,857 chum salmon (Table 20), are considerable when compared to Kuskokwim River commercial catches. The estimated 1983 chinook salmon subsistence harvest was the second largest on record, and more than doubled the commercial harvest (33,174 chinook salmon in Districts 1 and 2). It should be noted that the coho salmon subsistence harvest estimate is only minimal since the 1983 data was collected slightly earlier than usual, and well before the peak of the coho salmon run.

Total Harvest:

In all, some 101,490 chinook (Table 21), 69,845 sockeye, 203,794 coho (Table 22), 211 pink, and 476,555 chum salmon (Table 23) were caught in Kuskokwim River commercial and subsistence fisheries in 1983. The bulk of the coho salmon catch was taken commercially, and well over half of the chinook salmon harvest was taken during subsistence fishing activities. It should also be noted that the subsistence portion of the chum salmon total harvest includes small numbers of sockeye, pink, and immature male chinook salmon lumped together as "small salmon" in the reporting procedure.

Escapement:

Peak abundance aerial survey index counts were conducted on as many major spawning concentrations as time, budget constraints, and weather permitted. Major

Table 11. Lower Kuskokwim District (W-1) commercial catch of sockeye salmon, age and length (mm) by sex, 1983.

	AGE GROUP									
	31	41	42	51	52	53	62	63	74	TOTAL
MALES										
NUMBER	0	171	6,324	0	17,091	2,905	171	855	171	27,688
PERCENT	0.00	0.30	9.30	0.00	25.10	4.30	0.30	1.30	0.30	40.90
AV LENGTH	0.00	639.00	537.22	0.00	603.39	545.18	617.00	614.60	654.00	583.13
STD ERROR	0.00	0.00	2.65	0.00	2.49	2.91	0.00	8.54	0.00	2.71
SAMP SIZE	0	1	37	0	100	17	1	5	1	162
FEMALES										
NUMBER	171	1,709	6,324	171	28,542	1,709	342	1,025	0	39,993
PERCENT	0.30	2.50	9.30	0.30	42.20	2.50	0.50	1.50	0.00	59.10
AV LENGTH	539.00	550.10	528.43	580.00	566.89	535.90	563.50	569.50	0.00	558.74
STD ERROR	0.00	5.06	4.55	0.00	1.50	7.56	4.50	11.50	0.00	2.66
SAMP SIZE	1	10	37	1	167	10	2	6	0	234
SEXES COMBINED										
NUMBER	171	1,880	12,648	171	45,633	4,614	513	1,880	171	67,681
PERCENT	0.30	2.80	18.60	0.30	67.30	6.80	0.80	2.80	0.30	100.00
AV LENGTH	539.00	558.19	532.83	580.00	580.56	541.74	581.33	590.01	654.00	568.72
STD ERROR	0.00	4.60	3.60	0.00	1.87	4.63	3.00	10.16	0.00	2.68
SAMP SIZE	1	11	74	1	267	27	3	11	1	396

Table 12. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1983.

PERIOD 1 (8/01/83-8/05/83)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	1,753	13,814	619	16,186
PERCENT	7.00	54.80	2.50	64.30
AV LENGTH	532.24	555.31	576.50	553.62
STD ERROR	8.59	3.27	15.40	4.31
SAMP SIZE	17	134	6	157
FEMALES				
NUMBER	928	8,042	0	8,970
PERCENT	3.70	32.00	0.00	35.70
AV LENGTH	541.56	564.10	0.00	561.77
STD ERROR	11.13	2.86	0.00	3.72
SAMP SIZE	9	78	0	87
SEXES COMBINED				
NUMBER	2,681	21,856	619	25,156
PERCENT	10.70	86.80	2.50	100.00
AV LENGTH	535.47	558.54	576.50	556.53
STD ERROR	9.47	3.12	15.40	4.10
SAMP SIZE	26	212	6	244

-Continued-

Table 12. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1983 (continued).

PERIOD 2 (8/06/83-8/12/83)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	4,964	32,888	621	38,473
PERCENT	7.10	47.10	0.90	55.10
AV LENGTH	535.37	552.63	533.50	550.09
STD ERROR	9.52	3.51	18.50	4.52
SAMP SIZE	16	106	2	124
FEMALES				
NUMBER	3,413	26,682	1,241	31,336
PERCENT	4.90	38.20	1.80	44.90
AV LENGTH	527.18	552.74	551.00	549.89
STD ERROR	12.87	3.12	8.22	4.38
SAMP SIZE	11	86	4	101
SEXES COMBINED				
NUMBER	8,377	59,570	1,862	69,809
PERCENT	12.00	85.30	2.70	100.00
AV LENGTH	532.03	552.68	545.17	550.00
STD ERROR	10.88	3.33	11.64	4.46
SAMP SIZE	27	192	6	225

-Continued-

Table 12. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1983 (continued).

PERIOD 3 (8/13/83-8/19/83)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	2,260	22,976	188	25,424
PERCENT	4.80	49.00	0.40	54.20
AV LENGTH	529.58	546.81	494.00	544.89
STD ERROR	13.04	3.38	0.00	4.25
SAMP SIZE	12	122	1	135
FEMALES				
NUMBER	1,130	20,340	0	21,470
PERCENT	2.40	43.40	0.00	45.80
AV LENGTH	524.83	544.95	0.00	543.89
STD ERROR	13.17	2.59	0.00	3.15
SAMP SIZE	6	108	0	114
SEXES COMBINED				
NUMBER	3,390	43,316	188	46,894
PERCENT	7.20	92.40	0.40	100.00
AV LENGTH	528.00	545.94	494.00	544.43
STD ERROR	13.08	3.01	0.00	3.74
SAMP SIZE	18	230	1	249

-Continued-

Table 12. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1983 (continued).

PERIOD 4 (8/20/83-8/26/83)

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	2,590	26,116	647	29,353
PERCENT	4.80	48.40	1.20	54.40
AV LENGTH	551.42	553.17	563.33	553.24
STD ERROR	7.48	3.09	18.83	3.82
SAMP SIZE	12	121	3	136
FEMALES				
NUMBER	2,158	21,799	647	24,604
PERCENT	4.00	40.40	1.20	45.60
AV LENGTH	542.40	547.79	550.00	547.38
STD ERROR	11.80	2.84	12.58	3.89
SAMP SIZE	10	101	3	114
SEXES COMBINED				
NUMBER	4,748	47,915	1,294	53,957
PERCENT	8.80	88.80	2.40	100.00
AV LENGTH	547.32	550.72	556.67	550.57
STD ERROR	9.45	2.98	15.71	3.85
SAMP SIZE	22	222	6	250

-Continued-

Table 12. Lower Kuskokwim District (W-1) commercial catch of coho salmon, age and length (mm) by sex, 1983 (continued).

PERIODS COMBINED	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	11,567	95,794	2,075	109,436
PERCENT	5.91	48.92	1.06	55.89
AV LENGTH	537.36	551.77	552.05	550.25
STD ERROR	9.55	3.30	15.49	4.21
SAMP SIZE	57	483	12	552
FEMALES				
NUMBER	7,629	76,863	1,888	86,380
PERCENT	3.90	39.25	0.96	44.11
AV LENGTH	532.89	550.46	550.66	548.92
STD ERROR	12.19	2.84	10.09	3.77
SAMP SIZE	36	373	7	416
SEXES COMBINED				
NUMBER	19,196	172,657	3,963	195,816
PERCENT	9.81	88.17	2.02	100.00
AV LENGTH	535.58	551.19	551.39	549.66
STD ERROR	10.57	3.10	13.50	4.02
SAMP SIZE	93	856	19	968

Table 13. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1983.

PERIOD 1 (6/13/83-6/21/83)

	AGE GROUP				
	41	51	61	62	TOTAL
MALES					
NUMBER	5,826	12,182	530	106	18,644
PERCENT	19.00	39.70	1.70	0.30	60.70
AV LENGTH	597.49	636.47	634.60	670.00	624.43
STD ERROR	3.94	3.02	20.63	0.00	3.81
SAMP SIZE	55	115	5	1	176
FEMALES					
NUMBER	4,343	7,733	0	0	12,076
PERCENT	14.10	25.20	0.00	0.00	39.30
AV LENGTH	591.78	593.67	0.00	0.00	592.99
STD ERROR	4.32	2.78	0.00	0.00	3.33
SAMP SIZE	41	73	0	0	114
SEXES COMBINED					
NUMBER	10,169	19,915	530	106	30,720
PERCENT	33.10	64.90	1.70	0.30	100.00
AV LENGTH	595.05	619.85	634.60	670.00	612.07
STD ERROR	4.11	2.93	20.63	0.00	3.62
SAMP SIZE	96	188	5	1	290

-Continued-

Table 13. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1983 (continued).

PERIOD 2 (6/22/83-6/28/83)

	AGE GROUP			
	41	51	61	TOTAL
MALES				
NUMBER	9,983	25,259	908	36,150
PERCENT	14.40	36.40	1.30	52.10
AV LENGTH	590.97	608.45	635.33	604.30
STD ERROR	3.45	2.37	11.42	2.90
SAMP SIZE	66	167	6	239
FEMALES				
NUMBER	12,403	20,571	303	33,277
PERCENT	17.90	29.60	0.40	47.90
AV LENGTH	565.10	586.31	578.50	578.33
STD ERROR	2.61	2.41	3.50	2.50
SAMP SIZE	82	136	2	220
SEXES COMBINED				
NUMBER	22,386	45,830	1,211	69,427
PERCENT	32.30	66.00	1.70	100.00
AV LENGTH	576.64	598.51	621.12	591.85
STD ERROR	2.99	2.39	9.44	2.71
SAMP SIZE	148	303	8	459

-Continued-

Table 13. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1983 (continued).

PERIOD 3 (6/29/83-7/05/83)

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	0	21,042	22,717	956	44,715
PERCENT	0.00	20.80	22.40	0.90	44.10
AV LENGTH	0.00	589.57	609.60	620.75	600.41
STD ERROR	0.00	3.14	2.82	13.65	3.20
SAMP SIZE	0	88	95	4	187
FEMALES					
NUMBER	478	27,737	27,977	478	56,670
PERCENT	0.50	27.40	27.50	0.50	55.90
AV LENGTH	546.00	562.43	586.19	577.50	574.15
STD ERROR	6.00	2.41	2.07	15.50	2.38
SAMP SIZE	2	116	117	2	237
SEXES COMBINED					
NUMBER	478	48,779	50,694	1,434	101,385
PERCENT	0.50	48.20	49.90	1.40	100.00
AV LENGTH	546.00	574.14	596.68	606.33	585.73
STD ERROR	6.00	2.73	2.41	14.27	2.75
SAMP SIZE	2	204	212	6	424

-Continued-

Table 13. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1983 (continued).

PERIOD 4 (7/06/83-8/26/84)

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	981	17,652	10,927	140	29,700
PERCENT	1.50	26.50	16.50	0.20	44.70
AV LENGTH	531.43	577.71	600.23	632.00	584.72
STD ERROR	6.67	2.49	3.36	0.00	2.95
SAMP SIZE	7	126	78	1	212
FEMALES					
NUMBER	1,121	23,815	11,768	0	36,704
PERCENT	1.70	35.90	17.70	0.00	55.30
AV LENGTH	521.12	554.07	572.05	0.00	558.83
STD ERROR	7.32	2.08	2.55	0.00	2.39
SAMP SIZE	8	170	84	0	262
SEXES COMBINED					
NUMBER	2,102	41,467	22,695	140	66,404
PERCENT	3.20	62.40	34.20	0.20	100.00
AV LENGTH	525.93	564.13	585.62	632.00	570.41
STD ERROR	7.01	2.26	2.94	0.00	2.64
SAMP SIZE	15	296	162	1	474

-Continued-

Table 13. Lower Kuskokwim District (W-1) commercial catch of chum salmon, age and length (mm) by sex, 1983 (continued).

PERIODS COMBINED

	AGE GROUP					
	31	41	51	61	62	TOTAL
MALES						
NUMBER	981	54,503	71,085	2,534	106	129,209
PERCENT	0.37	20.34	26.51	0.94	0.04	48.20
AV LENGTH	531.43	586.82	612.30	629.48	670.00	601.31
STD ERROR	6.67	3.09	2.80	14.14	0.00	3.17
SAMP SIZE	7	335	455	16	1	814
FEMALES						
NUMBER	1,599	68,298	68,049	781	0	138,727
PERCENT	0.60	25.51	25.40	0.29	0.00	51.80
AV LENGTH	528.56	561.84	584.62	577.89	0.00	572.71
STD ERROR	7.05	2.50	2.41	9.50	0.00	2.54
SAMP SIZE	10	409	410	4	0	833
SEXES COMBINED						
NUMBER	2,580	122,801	139,134	3,315	106	267,936
PERCENT	0.97	45.85	51.91	1.23	0.04	100.00
AV LENGTH	529.65	572.92	598.75	617.29	670.00	586.50
STD ERROR	6.89	2.77	2.61	13.21	0.00	2.85
SAMP SIZE	17	744	865	20	1	1,647

Table 14. Middle Kuskokwim District (W-2) commercial catch of chinook salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP									
	32	42	51	52	62	63	72	73	83	TOTAL
MALES										
NUMBER	52	583	1	402	683	1	55	10	0	1,787
PERCENT	1.83	20.63	0.01	14.17	24.17	0.05	1.96	0.34	0.00	63.16
AV LENGTH	515.74	547.19	838.00	714.74	864.46	830.00	934.44	812.57	0.00	718.96
FEMALES										
NUMBER	0	0	0	150	797	0	89	7	1	1,044
PERCENT	0.00	0.00	0.00	5.30	28.07	0.00	3.17	0.25	0.05	36.84
AV LENGTH	0.00	0.00	0.00	788.36	862.54	0.00	910.64	860.00	810.00	855.91
SEXES COMBINED										
NUMBER	52	583	1	552	1,480	1	144	17	1	2,831
PERCENT	1.83	20.60	0.01	19.47	52.24	0.05	5.13	0.59	0.05	100.00
AV LENGTH	515.74	547.19	838.00	734.75	863.42	830.00	919.73	832.10	810.00	769.46

[1] Allocations by sex and age class based on 1983 Kuskokwim District (W-1) commercial catch samples.

Table 15. Middle Kuskokwim District (W-2) commercial catch of sockeye salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP									
	31	41	42	51	52	53	62	63	74	TOTAL
MALES										
NUMBER	0	3	110	0	296	50	3	15	3	480
PERCENT	0.00	0.30	9.30	0.00	25.10	4.30	0.30	1.30	0.30	40.90
AV LENGTH	0.00	639.00	537.22	0.00	603.39	545.18	617.00	614.60	654.00	583.14
FEMALES										
NUMBER	3	30	110	3	494	30	6	18	0	694
PERCENT	0.30	2.50	9.30	0.30	42.20	2.50	0.50	1.50	0.00	59.10
AV LENGTH	539.00	550.10	528.43	580.00	566.89	535.90	563.50	569.50	0.00	558.70
SEXES COMBINED										
NUMBER	3	33	220	3	790	80	9	33	3	1,174
PERCENT	0.30	2.80	18.60	0.30	67.30	6.80	0.80	2.80	0.30	100.00
AV LENGTH	539.00	558.18	532.83	580.00	580.57	541.70	581.33	590.00	654.00	568.69

[1] Allocations by sex and age class based on 1983 Kuskokwim District (W-1) commercial catch samples.

Table 16. Middle Kuskokwim District (W-2) commercial catch of coho salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	27	231	5	263
PERCENT	5.91	48.92	1.06	55.89
AV LENGTH	537.40	551.75	562.63	550.48
FEMALES				
NUMBER	18	185	5	208
PERCENT	3.90	39.25	0.96	44.11
AV LENGTH	532.61	550.51	550.60	548.97
SEXES COMBINED				
NUMBER	45	416	10	471
PERCENT	9.81	88.17	2.02	100.00
AV LENGTH	535.49	551.20	556.62	549.81

[1] Allocations based on sex and age class based on 1983 Kuskokwim District (W-1) commercial catch samples.

Table 17. Middle Kuskokwim District (W-2) commercial catch of chum salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP					
	31	41	51	61	62	TOTAL
MALES						
NUMBER	32	1,782	2,324	83	3	4,224
PERCENT	0.37	20.34	26.51	0.94	0.04	48.20
AV LENGTH	531.43	586.82	612.30	629.53	670.00	601.32
FEMALES						
NUMBER	53	2,235	2,224	26	0	4,538
PERCENT	0.60	25.51	25.40	0.29	0.00	51.80
AV LENGTH	528.63	561.84	584.62	577.88	0.00	572.71
SEXES COMBINED						
NUMBER	85	4,017	4,548	109	3	8,762
PERCENT	0.97	45.85	51.91	1.23	0.04	100.00
AV LENGTH	529.68	572.92	598.77	617.21	670.00	586.50

[1] Allocations by sex and age class based on 1983 Kuskokwim District (W-1) commercial catch samples.

Table 18. Kuskokwim River subsistence catch of chinook salmon, age and length (mm) by sex, 1983[1] [2].

	AGE GROUP									
	32	42	51	52	62	63	72	73	83	TOTAL
MALES										
NUMBER	1,251	14,081	26	9,681	16,517	33	1,335	234	0	43,158
PERCENT	1.83	20.63	0.01	14.17	24.17	0.05	1.96	0.34	0.00	63.16
AV LENGTH	515.65	547.18	838.00	714.71	864.46	830.00	934.40	812.57	0.00	719.08
FEMALES										
NUMBER	0	0	0	3,615	19,177	0	2,166	167	33	25,158
PERCENT	0.00	0.00	0.00	5.30	28.07	0.00	3.17	0.25	0.05	36.84
AV LENGTH	0.00	0.00	0.00	788.42	862.54	0.00	910.59	860.00	810.00	855.94
SEXES COMBINED										
NUMBER	1,251	14,081	26	13,296	35,694	33	3,501	401	33	68,316
PERCENT	1.83	20.63	0.01	19.37	52.24	0.05	5.13	0.59	0.05	100.00
AV LENGTH	515.65	547.18	838.00	734.75	863.42	830.00	919.67	832.32	810.00	769.48

[1] Allocations by sex and age class based on 1983 Kuskokwim District (W-1) commercial catch samples.

[2] Includes subsistence catches from McGrath, Nikolai, Telida, and Takotna.

Table 19. Kuskokwim River subsistence catch of coho salmon, age and length (mm) by sex, 1983[1] [2].

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	443	3,673	80	4,196
PERCENT	5.91	48.92	1.06	55.89
AV LENGTH	537.35	551.77	552.27	550.25
FEMALES				
NUMBER	293	2,945	73	3,311
PERCENT	3.90	39.25	0.96	44.11
AV LENGTH	532.91	550.46	550.66	548.91
SEXES COMBINED				
NUMBER	736	6,618	153	7,507
PERCENT	9.81	88.17	2.02	100.00
AV LENGTH	535.58	551.19	551.50	549.66

[1] Allocations by sex and age class based on 1983 Kuskokwim District (W-1) commercial catch samples.

[2] Subsistence catch presented is a minimal estimate only.

Table 20. Kuskokwim River subsistence catch of chum salmon, age and length (mm) by sex, 1983[1] [2] [3].

	AGE GROUP					
	31	41	51	61	62	TOTAL
MALES						
NUMBER	733	40,659	52,979	1,888	78	96,337
PERCENT	0.37	20.34	26.51	0.94	0.04	48.20
AV LENGTH	531.43	586.82	612.30	629.47	670.00	601.31
FEMALES						
NUMBER	1,194	50,983	50,760	583	0	103,520
PERCENT	0.60	25.51	25.40	0.29	0.00	51.80
AV LENGTH	528.56	561.84	584.62	577.89	0.00	572.71
SEXES COMBINED						
NUMBER	1,927	91,642	103,739	2,471	78	199,857
PERCENT	0.97	45.85	51.91	1.23	0.04	100.00
AV LENGTH	529.65	572.92	598.75	617.30	670.00	586.50

[1] Allocations by sex and age class based on 1983 Kuskokwim District (W-1) commercial catch samples.

[2] Includes subsistence catches from McGrath, Nikolai, Telida, and Takotna.

[3] Includes small numbers of sockeye and pink salmon.

Table 21. Kuskokwim River total harvest of chinook salmon by age and sex, 1983.

	AGE GROUP									
	32	42	51	52	62	63	72	73	83	TOTAL
MALES										
NUMBER	1,859	20,919	39	14,383	24,534	49	1,984	348	0	64,115
PERCENT	1.83	20.63	0.01	14.17	24.17	0.05	1.96	0.34	0.00	63.16
FEMALES										
NUMBER	0	0	0	5,371	28,491	0	3,216	248	49	37,375
PERCENT	0.00	0.00	0.00	5.30	28.07	0.00	3.17	0.25	0.05	36.84
SEXES COMBINED										
NUMBER	1,859	20,919	39	19,754	53,025	49	5,200	596	49	101,490
PERCENT	1.83	20.63	0.01	19.47	52.24	0.05	5.13	0.59	0.05	100.00

Table 22. Kuskokwim River total harvest of coho salmon by age and sex, 1983.

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	12,037	99,968	2,160	113,895
PERCENT	5.91	48.92	1.06	55.89
FEMALES				
NUMBER	7,940	79,993	1,966	89,899
PERCENT	3.90	39.25	0.96	44.11
SEXES COMBINED				
NUMBER	19,977	179,691	4,126	203,794
PERCENT	9.81	88.17	2.02	100.00

Table 23. Kuskokiwm River total harvest of chum salmon by age and sex, 1983[1].

	AGE GROUP					
	31	41	51	61	62	TOTAL
MALES						
NUMBER	1,746	96,944	126,388	4,505	187	229,770
PERCENT	0.37	20.34	26.51	0.94	0.04	48.20
FEMALES						
NUMBER	2,846	121,516	121,033	1,390	0	246,785
PERCENT	0.60	25.51	25.40	0.29	0.00	51.80
SEXES COMBINED						
NUMBER	4,592	218,460	247,421	5,895	187	476,555
PERCENT	0.97	45.85	51.91	1.23	0.04	100.00

[1] Includes small numbers of sockeye and pink salmon.

concentrations of chinook salmon were observed in the Aniak and Holitna River systems where 2,149 and 1,369 fish were recorded, respectively (Table 24). Smaller, but significant numbers were observed in the Kisaralik, Kwethluk, and South Fork of the Salmon River systems (476, 471, and 358 fish, respectively). No significant numbers of sockeye or pink salmon were observed during aerial surveys of index streams in 1983. Aerial surveys targeting on coho salmon were flown only on the Aniak, Kisaralik, and Kwethluk Rivers generating index counts of 764, 406, and 809 fish, respectively. Chum salmon were observed in large numbers in the Aniak, Holitna, Kisaralik, and Kwethluk Rivers (10,091, 9,060, 3,060, and 6,432, respectively). Although the index counts are a measure of relative abundance, most of them occurred at times of less than peak abundance for most of the species counted. Therefore, comparisons of counts between years should be viewed with caution.

Sonar escapement indices of migrating salmon in the Aniak River were tabulated daily in 1983 and peak escapement occurred on 10 July with an adjusted count of 5,421 fish (Table 25). These side-scanning sonar counts were not apportioned into daily species counts, although chinook and chum salmon were caught in 4.25 inch (11 cm), 5.5 inch (14 cm), 7.5 inch (19 cm), and 8.5 inch (22 cm) stretch mesh gillnets fished daily. Mesh-specific age, size, and sex compositions were calculated for each species, and are presented in Appendix Tables 1-8. Total estimated counts were apportioned by species based upon the weighted averages of fish caught in the gillnets without adjustments for size-dependent catchability. Of the 4,912 chinook salmon estimated to have passed the sonar site, age 6_2 females were present in much smaller relative magnitude (25%) than observed in the commercial harvests downriver although the sample size at the sonar project was very small (Table 26). Some 114,869 chum salmon were estimated to have also passed the sonar location, most of which were age 5_1 (87%) and male (77%) (Table 27). The test fishing biological sampling from the Kwegooyuk gillnet test fishing site are also shown in Appendix Tables 9 and 10.

Salmon migrating up the Kogrukluk River were counted and sampled at a weir on the lower reaches of this tributary to the Holitna River (Ignatti weir). In all, some 3,009 chinook, 1,147 sockeye, 8,327 coho, and 8,997 chum salmon were estimated to have passed beyond the weir (Table 28). Age 6_2 (51%) and age 5_2 (24%) fish comprised the major portion of the chinook salmon run (Table 29). The age structure of the Kogrukluk River chinook salmon escapement was nearly identical to the age structure of the District 1 commercial harvest. The sex ratio at the weir was even more heavily skewed toward males (71%) than that observed in the commercial fishery, however. Sockeye salmon sampled at the weir were mostly age 5_2 (69%) and age 4_1 (24%), and 63% were females (Table 30). The age composition contrasted sharply with that calculated from 1982 data (Huttunen 1984) which was subsequently reexamined. The revised 1982 age, sex, and length summary is included as an errata sheet (Appendix Table 11). Coho salmon sampled at the weir were primarily age 4_3 (98%) and 64% were males (Table 31). As in the commercial catch, the bulk of the chum salmon escapement was composed of age 5_1 fish (76%), although in contrast to the catch, males were more abundant at the weir at 58% (Table 32).

Quinhagak Area

Age, sex, and size statistics for Quinhagak area salmon harvests and escapements were calculated and are presented by category.

Table 24. Aerial survey indices of peak salmon abundance on spawning grounds of selected Kuskokwim area streams by species, 1983[1].

Location	Date Surveyed	Chinook	Sockeye	Coho	Pink	Chum
KUSKOKWIM RIVER:						
Aniak R.	7/30/83	2,149	50	--	--	10,091
	9/15/84	--	--	764	--	--
Bear Ck.[2]		---	NOT SURVEYED	---		
Chineekluk Ck.		---	NOT SURVEYED	---		
Chukowan R.	8/03/83	88	--	--	--	470
Eek R.	7/31/83	258	--	--	--	922
Mdl. Fk. Eek R.[3]	7/31/83	36	--	--	--	319
Holitna R.[4]	8/03/83	1,369	20	--	520	9,060
Holokuk R.	7/30/83	33	--	--	--	301
Kisaralik R.	7/23/83	476	--	--	--	3,060
	9/08/83	--	--	406	--	--
Kwethluk R.	7/23/83	471	--	--	--	6,432
	9/08/83	--	--	809	--	--
Oskawalik R.	7/30/83	43	--	--	--	602
Salmon R.[5]	7/29/83	231	--	--	--	992
N. Fk. Salmon R.[2]	8/03/83	59	--	--	--	--
Mdl. Fk. Salmon R.[2]	8/03/83	155	--	--	--	--
S. Fk. Salmon R.[2]	8/03/83	358	--	--	--	--
KUSKOKWIM BAY:						
Goodnews R.	7/28/83	2,600	5,450	--	--	--
Mdl. Fk. Goodnews R.	7/28/83	2,380	1,550	--	--	--
Kanektok R.	7/28/83	--	2,340	--	--	9,360
Kagati L.		---	NOT SURVEYED	---		

[1] All surveys were good to fair unless otherwise noted.

[2] Pitka River system.

[3] Poor survey conditions.

[4] Below Ignatti weir on the Kogrukluk River.

[5] Aniak River system.

Table 25. Aniak River daily adjusted sonar counts, 1983.

Date	Adjusted counts	Date	Adjusted counts
6/19	259	7/09	2,990
6/20	162	7/10	5,421
6/21	336	7/11	3,752
6/22	651	7/12	2,685
6/23	786	7/13	3,803
6/24	735	7/14	3,229
6/25	563	7/15	2,379
6/26	573	7/16	2,699
6/27	754	7/17	2,417
6/28	935	7/18	1,604
6/29	1,304	7/19	2,495
6/30	1,500	7/20	1,948
7/01	1,779	7/21	1,529
7/02	1,498	7/22	2,010
7/03	1,739	7/23	1,343
7/04	4,720	7/24	1,596
7/05	3,623	7/25	1,255
7/06	4,728	7/26	1,127
7/07	3,896	7/27	1,105
7/08	3,016	7/28	909
		Total	79,853

Table 26. Aniak River escapement of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP				
	42	52	62	72	TOTAL
MALES					
NUMBER	614	1,842	0	0	2,456
PERCENT	12.50	37.50	0.00	0.00	50.00
AV LENGTH	510.00	605.67	0.00	0.00	581.75
STD ERROR	0.00	44.74	0.00	0.00	33.56
SAMP SIZE	1	3	0	0	4
FEMALES					
NUMBER	0	0	1,228	1,228	2,456
PERCENT	0.00	0.00	25.00	25.00	50.00
AV LENGTH	0.00	0.00	857.50	917.50	887.50
STD ERROR	0.00	0.00	2.50	7.50	5.00
SAMP SIZE	0	0	2	2	4
SEXES COMBINED					
NUMBER	614	1,842	1,228	1,228	4,912
PERCENT	12.50	37.50	25.00	25.00	100.00
AV LENGTH	510.00	605.67	857.50	917.50	734.63
STD ERROR	0.00	44.74	2.50	7.50	19.28
SAMP SIZE	1	3	2	2	8

Table 27. Aniak River escapement of chum salmon, age and length (mm) by sex, 1983.

	AGE GROUP		
	41	51	TOTAL
MALES			
NUMBER	7,059	80,857	87,916
PERCENT	6.10	70.40	76.50
AV LENGTH	565.18	610.37	606.74
STD ERROR	6.25	2.24	2.57
SAMP SIZE	11	126	137
FEMALES			
NUMBER	7,701	19,252	26,953
PERCENT	6.70	16.80	23.50
AV LENGTH	556.17	575.93	570.28
STD ERROR	6.50	3.66	4.47
SAMP SIZE	12	30	42
SEXES COMBINED			
NUMBER	14,760	100,109	114,869
PERCENT	12.80	87.20	100.00
AV LENGTH	560.48	603.75	598.19
STD ERROR	6.38	2.52	3.01
SAMP SIZE	23	156	179

Table 28. Kogrukluk River daily salmon escapement counts and estimated total escapements by species, 1983.

Date	Chinook	Sockeye	Coho	Chum
6/29	57	3	0	345
6/30	79	3	0	222
7/01	31	7	0	345
7/02	317	14	0	536
	Weir Washed Out			
7/06	75	17	0	178
7/07	62	11	0	590
7/08	48	24	0	411
7/09	241	225	0	415
7/10	71	67	0	201
7/11	51	4	0	5
	Weir Inoperable			
8/13	0	0	18	0
8/14	0	0	35	0
8/15	0	0	56	0
8/16	0	0	18	0
8/17	0	0	26	0
8/18	0	0	46	0
8/19	0	0	24	0
8/20	0	0	11	0
8/21	0	0	3	0
8/22	0	0	67	0
8/23	0	0	152	0
8/24	0	0	100	0
8/25	0	0	35	0
8/26	0	0	6	0
8/27	0	0	27	0
8/28	0	0	270	0
8/29	0	0	49	0
8/30	0	0	28	0
8/31	0	0	161	0
9/01	0	0	580	0
9/02	0	0	27	0
9/03	0	0	469	0
9/04	0	0	363	0
9/05	0	0	100	0
9/06	0	0	556	0
9/07	0	0	205	0
9/08	0	0	111	0
9/09	0	0	151	0
9/10	0	0	858	0
9/11	0	0	360	0
9/12	0	0	15	0
9/13	0	0	175	0
9/14	0	0	887	0
9/15	0	0	134	0
9/16	0	0	151	0
9/17	0	0	424	0
9/18	0	0	405	0
9/19	0	0	269	0
9/20	0	0	189	0
9/21	0	0	125	0
9/22	0	0	257	0
9/23	0	0	114	0
9/24	0	0	135	0
9/25	0	0	47	0
9/26	0	0	45	0
9/27	0	0	43	0
Totals	1,032	375	8,327	3,284
Est. Total Escapement	3,009	1,147	8,327	8,997

Table 29. Kogrukluk River escapement of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP						
	32	41	42	52	62	72	TOTAL
MALES							
NUMBER	7	7	603	696	781	40	2,134
PERCENT	0.20	0.20	20.00	23.10	26.10	1.30	70.90
AV LENGTH	398.00	551.00	546.04	659.07	863.72	993.33	707.08
STD ERROR	0.00	0.00	3.91	5.39	6.68	28.95	5.85
SAMP SIZE	1	1	91	105	118	6	322
FEMALES							
NUMBER	0	0	0	20	756	99	875
PERCENT	0.00	0.00	0.00	0.70	25.10	3.30	29.10
AV LENGTH	0.00	0.00	0.00	672.33	881.11	928.73	881.73
STD ERROR	0.00	0.00	0.00	39.28	5.00	14.52	6.86
SAMP SIZE	0	0	0	3	114	15	132
SEXES COMBINED							
NUMBER	7	7	603	716	1,537	139	3,009
PERCENT	0.20	0.20	20.00	23.80	51.20	4.60	100.00
AV LENGTH	398.00	551.00	546.04	659.44	872.27	947.32	757.87
STD ERROR	0.00	0.00	3.91	6.34	5.85	18.64	6.14
SAMP SIZE	1	1	91	108	232	21	454

Table 30. Kogrukluk River escapement of sockeye salmon, age and length (mm) by sex, 1983.

	AGE GROUP				
	41	42	52	63	TOTAL
MALES					
NUMBER	96	0	313	14	423
PERCENT	8.30	0.00	27.40	1.20	36.90
AV LENGTH	574.00	0.00	589.52	621.00	587.04
STD ERROR	14.38	0.00	5.08	0.00	7.02
SAMP SIZE	7	0	23	1	31
FEMALES					
NUMBER	178	27	478	41	724
PERCENT	15.50	2.40	41.60	3.60	63.10
AV LENGTH	537.85	520.50	558.83	537.00	551.01
STD ERROR	4.29	7.50	4.27	2.52	4.30
SAMP SIZE	13	2	35	3	53
SEXES COMBINED					
NUMBER	274	27	791	55	1,147
PERCENT	23.80	2.40	69.00	4.80	100.00
AV LENGTH	550.52	520.50	570.97	558.38	564.29
STD ERROR	7.82	7.50	4.59	1.89	5.30
SAMP SIZE	20	2	58	4	84

Table 31. Kogrukluk River escapement of coho salmon, age and length (mm) by sex, 1983.

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	131	5,134	36	5,301
PERCENT	1.60	61.70	0.40	63.70
AV LENGTH	562.27	558.15	559.00	558.26
STD ERROR	8.85	1.58	17.06	1.86
SAMP SIZE	11	431	3	445
FEMALES				
NUMBER	36	2,978	12	3,026
PERCENT	0.40	35.80	0.10	36.30
AV LENGTH	551.67	555.39	584.00	555.46
STD ERROR	12.81	1.69	0.00	1.82
SAMP SIZE	3	250	1	254
SEXES COMBINED				
NUMBER	167	8,112	48	8,327
PERCENT	2.00	97.50	0.50	100.00
AV LENGTH	559.98	557.14	565.25	557.24
STD ERROR	9.70	1.62	12.80	1.85
SAMP SIZE	14	681	4	699

Table 32. Kogrukluk River escapement of chum salmon, age and length (mm) by sex, 1983.

	AGE GROUP					
	31	41	51	52	61	TOTAL
MALES						
NUMBER	0	860	4,264	19	94	5,237
PERCENT	0.00	9.60	47.40	0.20	1.00	58.20
AV LENGTH	0.00	571.70	610.75	589.00	642.60	604.83
STD ERROR	0.00	4.32	1.97	0.00	9.96	2.49
SAMP SIZE	0	46	228	1	5	280
FEMALES						
NUMBER	37	1,104	2,563	0	56	3,760
PERCENT	0.40	12.30	28.50	0.00	0.60	41.80
AV LENGTH	494.00	545.51	581.68	0.00	581.00	570.19
STD ERROR	26.00	3.67	2.23	0.00	16.50	3.10
SAMP SIZE	2	59	137	0	3	201
SEXES COMBINED						
NUMBER	37	1,964	6,827	19	150	8,997
PERCENT	0.40	21.90	75.90	0.20	1.60	100.00
AV LENGTH	494.00	556.98	599.84	589.00	619.60	590.35
STD ERROR	26.00	3.95	2.07	0.00	12.41	2.75
SAMP SIZE	2	105	365	1	8	481

District (W-4) Commercial Harvest:

Similar to the sampling results in District 1, the record commercial harvest of 46,385 chinook salmon taken in District 4 was largely age 6_2 (64%) and male (61%), with most of the remainder as age 4_2 at 26% (Table 33). Also similar to the sampling results in District 1, the age 5_2 component of the District 4 chinook salmon catch was unusually small (7%). The 10,263 sockeye salmon taken in District 4 were nearly all one-freshwater (92%) with 51% age 4_2 and 34% age 5_2 (Table 34). The 32,442 coho salmon landed were predictably age 4_3 (96%) and were evenly distributed between sexes (Table 35). Chum salmon catches totaled 23,090 fish and nearly all were age 4_1 (60%) and 39% age 5_1 (Table 36). Females comprised 59% of the chum salmon harvest.

Subsistence Harvest:

Quinhagak area subsistence catches of 776 chinook (Table 37), 77 coho (Table 38), and 2,542 chum salmon (Table 39) were apportioned into average size by age and sex based on the commercial harvest samples of each species. It should be noted that the coho salmon harvest is only minimal because most of the coho salmon subsistence fishing activities generally occur well after the subsistence survey took place.

Total Harvest:

The 1983 commercial and subsistence harvests in the Quinhagak area totaled 47,161 chinook (Table 40), 10,263 sockeye, 32,519 coho (Table 41), 168 pink, and 25,632 chum salmon (Table 42). The largest proportion of each of these harvest figures was from the commercial segment as subsistence harvests represented less than 10% of the total harvest of any one species.

Escapement:

All five species of North American Pacific salmon were identified at a sonar site on the lower Kanektok River as they migrated toward upriver spawning grounds. Sonar counts were apportioned by species daily based upon drift gillnet test fishing composition (Table 43). Most of the 49,312 chinook salmon estimated to have escaped to the spawning grounds were age 6_2 (76%) and evenly split between the sexes (Table 44). In contrast to the District 4 commercial harvest, most of the estimated 53,895 spawning chum salmon were age 5_1 (61%) and 54% were males (Table 45). Because of the current uncertainty involved in assigning sonar echos to any particular species, the values presented are considered to be preliminary estimates.

Goodnews Area

Age, sex, and size statistics for the Goodnews area salmon harvests and escapements were calculated and are presented by category.

District (W-5) Commercial Harvest:

Similar to the age composition observed in the District 1 and 4 harvests, the majority of the record 14,117 chinook salmon caught in District 5 were age 6_2 (74%) and age 4_2 (15%) with a notable absence of age 5_2 fish (Table 46). Sockeye

Table 33. Quinhagak District (W-4) commercial catch of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP					
	32	42	52	62	72	TOTAL
MALES						
NUMBER	184	11,994	2,815	12,728	673	28,394
PERCENT	0.40	25.90	6.10	27.30	1.50	61.20
AV LENGTH	500.33	550.45	702.93	881.60	963.73	723.48
STD ERROR	37.90	2.85	14.56	5.31	21.92	5.79
SAMP SIZE	3	196	46	208	11	464
FEMALES						
NUMBER	0	61	367	17,135	428	17,991
PERCENT	0.00	0.10	0.80	37.00	0.90	38.80
AV LENGTH	0.00	624.00	781.17	877.02	892.43	874.57
STD ERROR	0.00	0.00	32.53	2.64	21.69	3.70
SAMP SIZE	0	1	6	280	7	294
SEXES COMBINED						
NUMBER	184	12,055	3,182	29,863	1,101	46,385
PERCENT	0.40	26.00	6.90	64.30	2.40	100.00
AV LENGTH	500.33	550.82	711.95	878.97	936.01	782.08
STD ERROR	37.90	2.84	16.64	3.78	21.83	4.98
SAMP SIZE	3	197	52	488	18	758

Table 34. Quinhagak District (W-4) commercial catch of sockeye salmon, age and length (mm) by sex, 1983.

	AGE GROUP							
	41	42	51	52	53	62	63	TOTAL
MALES								
NUMBER	109	2,249	197	1,812	131	393	22	4,913
PERCENT	1.10	21.90	1.90	17.70	1.30	3.80	0.20	47.90
AV LENGTH	578.80	540.22	632.89	593.28	539.33	611.28	540.00	570.02
STD ERROR	7.03	1.71	8.44	2.40	12.37	6.77	0.00	3.03
SAMP SIZE	5	103	9	83	6	18	1	225
FEMALES								
NUMBER	175	3,013	44	1,681	175	262	0	5,350
PERCENT	1.70	29.30	0.40	16.40	1.70	2.60	0.00	52.10
AV LENGTH	552.75	518.45	588.00	559.00	514.50	589.83	0.00	536.25
STD ERROR	9.52	1.17	6.00	2.24	4.51	5.29	0.00	2.13
SAMP SIZE	8	138	2	77	8	12	0	245
SEXES COMBINED								
NUMBER	284	5,262	241	3,493	306	655	22	10,263
PERCENT	2.80	51.20	2.30	34.10	3.00	6.40	0.20	100.00
AV LENGTH	562.75	527.75	624.69	576.78	525.13	602.70	540.00	552.42
STD ERROR	8.56	1.40	8.00	2.32	7.88	6.18	0.00	2.56
SAMP SIZE	13	241	11	160	14	30	1	470

Table 35. Quinhagak District (W-4) commercial catch of coho salmon, age and length (mm) by sex, 1983.

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	504	16,474	168	17,146
PERCENT	1.60	50.70	0.50	52.80
AV LENGTH	501.00	573.32	595.00	571.41
STD ERROR	27.75	4.14	0.00	4.80
SAMP SIZE	3	98	1	102
FEMALES				
NUMBER	336	14,624	336	15,296
PERCENT	1.00	45.20	1.00	47.20
AV LENGTH	533.50	573.21	586.00	572.62
STD ERROR	49.50	3.36	9.00	4.50
SAMP SIZE	2	87	2	91
SEXES COMBINED				
NUMBER	840	31,098	504	32,442
PERCENT	2.60	95.90	1.50	100.00
AV LENGTH	514.00	573.27	589.00	571.98
STD ERROR	36.45	3.78	6.00	4.66
SAMP SIZE	5	185	3	193

Table 36. Quinhagak District (W-4) commercial catch of chum salmon, age and length (mm) by sex, 1983.

	AGE GROUP					
	31	41	51	52	61	TOTAL
MALES						
NUMBER	0	5,700	3,689	0	144	9,533
PERCENT	0.00	24.70	16.00	0.00	0.60	41.30
AV LENGTH	0.00	589.51	618.64	0.00	576.33	600.58
STD ERROR	0.00	1.96	3.77	0.00	8.84	2.76
SAMP SIZE	0	119	77	0	3	199
FEMALES						
NUMBER	144	8,047	5,222	48	96	13,557
PERCENT	0.60	34.90	22.60	0.20	0.40	58.70
AV LENGTH	510.33	562.34	585.26	529.00	579.50	570.62
STD ERROR	4.91	1.74	2.60	0.00	.50	2.09
SAMP SIZE	3	168	109	1	2	283
SEXES COMBINED						
NUMBER	144	13,747	8,911	48	240	23,090
PERCENT	0.60	59.60	38.60	0.20	1.00	100.00
AV LENGTH	510.33	573.61	599.08	529.00	577.60	582.99
STD ERROR	4.91	1.83	3.08	0.00	5.50	2.37
SAMP SIZE	3	287	186	1	5	482

Table 37. Quinhagak area subsistence catch of chinook salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP					
	32	42	52	62	72	TOTAL
MALES						
NUMBER	3	201	47	213	11	475
PERCENT	0.40	25.90	6.10	27.30	1.50	61.20
AV LENGTH	500.33	550.45	702.93	881.60	963.73	723.29
FEMALES						
NUMBER	0	1	6	287	7	301
PERCENT	0.00	0.10	0.80	37.00	0.90	38.80
AV LENGTH	0.00	624.00	781.17	877.02	892.43	874.63
SEXES COMBINED						
NUMBER	3	202	53	500	18	776
PERCENT	0.40	26.00	6.90	64.30	2.40	100.00
AV LENGTH	500.33	550.81	711.79	878.97	936.00	781.99

[1] Allocations by sex and age class based on 1983 Quinhagak District (W-4) commercial catch samples.

Table 38. Quinhagak area subsistence catch of coho salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	1	39	1	41
PERCENT	1.60	50.70	0.50	52.80
AV LENGTH	501.00	573.32	595.00	571.41
FEMALES				
NUMBER	1	34	1	36
PERCENT	1.00	45.20	1.00	47.20
AV LENGTH	533.50	573.21	586.00	572.46
SEXES COMBINED				
NUMBER	2	73	2	77
PERCENT	2.60	95.90	1.50	100.00
AV LENGTH	514.00	573.27	589.00	571.98

[1] Allocations by sex and age class based on 1983 Quinhagak District (W-4) commercial catch samples.

Table 39. Quinhagak area subsistence catch of chum salmon, age and length (mm) by sex, 1983[1] [2].

	AGE GROUP					
	31	41	51	52	61	TOTAL
MALES						
NUMBER	0	627	406	0	16	1,049
PERCENT	0.00	24.70	16.00	0.00	0.60	41.30
AV LENGTH	0.00	589.51	618.64	0.00	576.33	600.58
FEMALES						
NUMBER	16	886	575	5	11	1,493
PERCENT	0.60	34.90	22.60	0.20	0.40	58.70
AV LENGTH	510.33	562.34	585.26	529.00	579.50	570.62
SEXES COMBINED						
NUMBER	16	1,513	981	5	27	2,542
PERCENT	0.60	59.60	38.60	0.20	1.00	100.00
AV LENGTH	510.33	573.60	599.07	529.00	577.62	582.99

[1] Allocations by sex and age class based on 1983 Quinhagak District (W-4) commercial catch samples.

[2] Includes small numbers of sockeye salmon.

Table 40. Quinhagak area total harvest of chinook salmon by age and sex, 1983.

	AGE GROUP					
	32	42	52	62	72	TOTAL
MALES						
NUMBER	187	12,195	2,862	12,941	684	28,869
PERCENT	0.40	25.90	6.10	27.30	1.50	61.20
FEMALES						
NUMBER	0	62	373	17,422	435	18,292
PERCENT	0.00	0.10	0.80	37.00	0.90	38.80
SEXES COMBINED						
NUMBER	187	12,257	3,235	30,363	1,119	47,161
PERCENT	0.40	26.00	6.90	64.30	2.40	100.00

Table 41. Quinhagak area total harvest of coho salmon by age and sex, 1983.

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	505	16,513	169	17,187
PERCENT	1.60	50.70	0.50	52.80
FEMALES				
NUMBER	337	14,658	337	15,332
PERCENT	1.00	45.20	1.00	47.20
SEXES COMBINED				
NUMBER	842	31,172	506	32,519
PERCENT	2.60	95.90	1.50	100.00

Table 42. Quinhagak area total harvest of chum salmon by age and sex, 1983[1].

	AGE GROUP					
	31	41	51	52	61	TOTAL
MALES						
NUMBER	0	6,327	4,095	0	160	10,582
PERCENT	0.00	24.70	16.00	0.00	0.60	41.30
FEMALES						
NUMBER	160	8,937	5,797	53	107	15,050
PERCENT	0.60	34.90	22.60	0.20	0.40	58.70
SEXES COMBINED						
NUMBER	160	15,260	9,892	53	267	25,632
PERCENT	0.60	59.60	38.60	0.20	1.00	100.00

[1] Includes small numbers of sockeye and pink salmon.

Table 43. Kanektok River daily sonar salmon escapement counts as apportioned by gillnet test fishing by species, 1983.

Date	Chinook	Sockeye	Chum	Other[1]
6/13	97	0	1	0
6/14	596	0	7	0
6/15	1,028	1	11	0
6/16	567	1	6	0
6/17	322	6	33	0
6/18	981	19	99	0
6/19	1,541	29	155	0
6/20	1,357	26	137	0
6/21	881	17	88	0
6/22	1,309	25	132	0
6/23	1,338	26	134	0
6/24	913	27	86	0
6/25	1,251	37	118	0
6/26	3,317	97	313	0
6/27	1,081	32	101	0
6/28	1,070	60	204	0
6/29	0	0	1,360	0
6/30	1,484	494	247	0
7/01	284	1,710	1,426	0
7/02	2,374	1,052	2,108	0
7/03	721	1,200	2,643	0
7/04	589	348	1,716	0
7/05	1,899	0	4,740	0
7/06	1,435	2,256	1,029	0
7/07	2,968	1,268	2,968	0
7/08	4,635	1,327	1,327	0
7/09	1,875	1,504	4,882	0
7/10	1,775	3,199	2,847	0
7/11	1,595	1,276	5,103	0
7/12	1,360	1,584	2,945	0
7/13	679	1,223	678	0
7/14	1,141	342	799	0
7/15	1,401	557	1,401	0
7/16	895	384	1,278	0
7/17	1,208	122	1,086	122
7/18	545	148	593	49
7/19	542	678	1,086	0
7/20	1,209	723	1,209	0
7/21	313	388	1,243	77
7/22	178	178	1,427	90
7/23	0	167	1,336	278
7/24	55	18	768	55
7/25	283	48	1,225	141
7/26	71	118	945	259
7/27	127	127	1,083	63
7/28	23	70	772	141
Totals	49,312	22,911	53,895	1,275

[1] Includes pink and coho salmon, and various non-anadromous species.

Table 44. Kanektok River sonar escapement of chinook salmon apportioned by gillnet test fishing, age and length (mm) by sex, 1983[1].

	AGE GROUP								
	32	41	42	52	62	63	72	73	TOTAL
MALES									
NUMBER	170	170	3,146	5,356	14,624	0	255	255	23,976
PERCENT	0.30	0.30	6.40	10.90	29.70	0.00	0.50	0.50	48.60
AV LENGTH	527.50	550.00	551.89	757.94	881.67	0.00	1001.67	935.00	807.74
STD ERROR	62.50	5.00	9.21	9.23	5.10	0.00	13.64	38.84	7.42
SAMP SIZE	2	2	37	63	172	0	3	3	282
FEMALES									
NUMBER	0	0	85	1,190	22,616	85	680	680	25,336
PERCENT	0.00	0.00	0.20	2.40	45.80	0.20	1.40	1.40	51.40
AV LENGTH	0.00	0.00	635.00	815.71	862.00	835.00	898.12	850.62	859.64
STD ERROR	0.00	0.00	0.00	12.72	2.66	0.00	28.13	16.02	4.16
SAMP SIZE	0	0	1	14	266	1	8	8	298
SEXES COMBINED									
NUMBER	170	170	3,231	6,546	37,240	85	935	935	49,312
PERCENT	0.30	0.30	6.60	13.30	75.50	0.20	1.90	1.90	100.00
AV LENGTH	527.50	550.00	554.08	768.44	869.72	835.00	926.36	873.63	834.40
STD ERROR	62.50	5.00	8.97	9.86	3.62	0.00	24.18	22.24	5.74
SAMP SIZE	2	2	38	77	438	1	11	11	580

[1] Age, length, and sex data were obtained during spawning ground carcass surveys.

Table 45. Kanektok River sonar escapement of chum salmon apportioned by gillnet test fishing, age and length (mm) by sex, 1983[1].

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	0	8,333	20,294	538	29,165
PERCENT	0.00	15.50	37.60	1.00	54.10
AV LENGTH	0.00	581.85	614.30	633.75	605.39
STD ERROR	0.00	3.47	2.30	6.25	2.70
SAMP SIZE	0	62	151	4	217
FEMALES					
NUMBER	134	11,827	12,769	0	24,730
PERCENT	0.20	21.90	23.80	0.00	45.90
AV LENGTH	570.00	549.55	568.26	0.00	559.32
STD ERROR	0.00	2.57	2.97	0.00	2.76
SAMP SIZE	1	88	95	0	184
SEXES COMBINED					
NUMBER	134	20,160	33,063	538	53,895
PERCENT	0.20	37.40	61.40	1.00	100.00
AV LENGTH	570.00	562.90	596.52	633.75	584.25
STD ERROR	0.00	2.94	2.56	6.25	2.73
SAMP SIZE	1	150	246	4	401

[1] Age, length, and sex data were obtained during spawning ground carcass surveys.

Table 46. Goodnews District (W-5) commercial catch of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP				
	42	52	62	72	TOTAL
MALES					
NUMBER	2,026	1,078	3,577	151	6,832
PERCENT	14.40	7.60	25.30	1.10	48.40
AV LENGTH	546.56	709.46	882.98	979.43	757.97
STD ERROR	4.03	9.37	5.12	28.51	5.98
SAMP SIZE	94	50	166	7	317
FEMALES					
NUMBER	22	86	6,897	280	7,285
PERCENT	0.20	0.60	48.80	2.00	51.60
AV LENGTH	499.00	830.50	878.67	918.92	878.50
STD ERROR	0.00	27.40	2.48	12.69	3.16
SAMP SIZE	1	4	320	13	338
SEXES COMBINED					
NUMBER	2,048	1,164	10,474	431	14,117
PERCENT	14.60	8.20	74.10	3.10	100.00
AV LENGTH	546.05	718.40	880.14	940.12	820.17
STD ERROR	3.99	10.71	3.38	18.23	4.53
SAMP SIZE	95	54	486	20	655

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Mary Lou Barry,
Archivist
5/21/02

salmon catches totaled 11,716 in 1983, most of which were age 5_2 fish (49%) and age 4_2 fish at 37% (Table 47). Nearly all of the 19,660 coho salmon caught were age 4_3 (99%) and as with both chinook and sockeye salmon, were evenly split between the sexes (Table 48). The 6,766 chum salmon caught in District 5 were mostly age 5_1 (53%) and age 4_1 (43%) and 61% were females (Table 49).

Subsistence Harvest:

Subsistence harvests of 1,066 chinook (Table 50) and 1,518 chum salmon (Table 51) were similar to those reported in the Quinhagak area, but were relatively minor in comparison to those reported in District 1. No subsistence coho salmon harvest estimates were made in 1983 because of the early timing of the subsistence survey and because of the relatively small numbers of that species normally taken. Since subsistence-caught salmon were not sampled, the basic biological information presented in Tables 50-51 was apportioned directly from the District 5 catch samples collected.

Total Harvest:

Totals of 15,183 chinook (Table 52), 11,716 sockeye, 19,660 coho, and 8,284 chum salmon (Table 53) were caught during both commercial and subsistence fishing activities in 1983. Combined age compositions presented were again apportioned directly from catch sample data.

Escapement:

Salmon migrating up the Middle Fork of the Goodnews River were counted daily from a tower in 1983. In all, 5,296 chinook, 23,971 sockeye, and 16,062 chum salmon were estimated to have passed the tower (Table 54). The estimated total escapement of 14,398 chinook salmon into all three forks of the Goodnews River were predominantly age 6_2 (84%) and evenly split between the sexes (Table 55). The 69,955 sockeye salmon estimated to have escaped to spawn in the Goodnews River system were all age 4_2 (78%) or 5_2 (22%), though this may be more reflective of a small sample size (n=18) than of a homogeneous population age structure (Table 56). Most of the total estimated total escapement of 23,667 chum salmon were age 5_1 (64%) and 57% were males (Table 57).

ACKNOWLEDGMENTS

The author would like to thank Mr. Henry Yuen for developing the programs used to edit and compile age, sex, and length statistics. Manuscript review was provided by Bill Arvey, Linda Brannian, and Gary Finger.

Table 47. Goodnews District (W-5) commercial catch of sockeye salmon, age and length (mm) by sex, 1983.

	AGE GROUP							
	41	42	51	52	53	62	63	TOTAL
MALES								
NUMBER	87	2,146	0	3,422	232	261	232	6,380
PERCENT	0.70	18.30	0.00	29.30	2.00	2.20	2.00	54.50
AV LENGTH	577.67	540.20	0.00	590.08	541.75	616.11	608.25	573.10
STD ERROR	3.71	3.80	0.00	2.29	7.55	5.36	10.41	3.43
SAMP SIZE	3	74	0	118	8	9	8	220
FEMALES								
NUMBER	145	2,204	29	2,349	232	145	232	5,336
PERCENT	1.20	18.80	0.20	20.10	2.00	1.20	2.00	45.50
AV LENGTH	550.00	527.88	570.00	552.91	516.75	588.20	568.87	542.67
STD ERROR	9.61	3.43	0.00	2.09	4.44	8.06	8.81	3.39
SAMP SIZE	5	76	1	81	8	5	8	184
SEXES COMBINED								
NUMBER	232	4,350	29	5,771	464	406	464	11,716
PERCENT	1.90	37.10	0.20	49.40	4.00	3.40	4.00	100.00
AV LENGTH	560.38	533.96	570.00	574.95	529.25	606.14	588.56	559.24
STD ERROR	7.40	3.61	0.00	2.21	6.00	6.32	9.61	3.41
SAMP SIZE	8	150	1	199	16	14	16	404

Table 48. Goodnews District (W-5) commercial catch of coho salmon, age and length (mm) by sex, 1983.

	AGE GROUP			
	32	43	54	TOTAL
MALES				
NUMBER	97	8,663	97	8,857
PERCENT	0.50	44.00	0.50	45.00
AV LENGTH	465.00	588.38	566.00	586.78
STD ERROR	0.00	4.21	0.00	4.11
SAMP SIZE	1	89	1	91
FEMALES				
NUMBER	0	10,803	0	10,803
PERCENT	0.00	55.00	0.00	55.00
AV LENGTH	0.00	580.79	0.00	580.79
STD ERROR	0.00	2.82	0.00	2.82
SAMP SIZE	0	111	0	111
SEXES COMBINED				
NUMBER	97	19,466	97	19,660
PERCENT	0.50	99.00	0.50	100.00
AV LENGTH	465.00	584.17	566.00	583.49
STD ERROR	0.00	3.44	0.00	3.40
SAMP SIZE	1	200	1	202

Table 49. Goodnews District (W-5) commercial catch of chum salmon, age and length (mm) by sex, 1983.

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	63	1,034	1,535	31	2,663
PERCENT	0.90	15.30	22.70	0.50	39.40
AV LENGTH	511.50	572.42	610.80	656.00	594.07
STD ERROR	35.50	6.36	4.29	0.00	5.78
SAMP SIZE	2	33	49	1	85
FEMALES					
NUMBER	188	1,848	2,067	0	4,103
PERCENT	2.80	27.30	30.50	0.00	60.60
AV LENGTH	514.17	562.92	574.38	0.00	566.46
STD ERROR	10.64	3.62	2.48	0.00	3.37
SAMP SIZE	6	59	66	0	131
SEXES COMBINED					
NUMBER	251	2,882	3,602	31	6,766
PERCENT	3.70	42.60	53.20	0.50	100.00
AV LENGTH	513.50	566.33	589.90	656.00	577.33
STD ERROR	16.86	4.60	3.25	0.00	4.31
SAMP SIZE	8	92	115	1	216

Table 50. Goodnews area subsistence catch of chinook salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP				
	42	52	62	72	TOTAL
MALES					
NUMBER	153	81	271	11	516
PERCENT	14.40	7.60	25.30	1.10	48.40
AV LENGTH	546.56	709.46	882.98	979.43	758.05
FEMALES					
NUMBER	2	7	520	21	550
PERCENT	0.20	0.60	48.80	2.00	51.60
AV LENGTH	499.00	830.50	878.67	918.92	878.21
SEXES COMBINED					
NUMBER	155	88	791	32	1,066
PERCENT	14.60	8.20	74.10	3.10	100.00
AV LENGTH	545.95	719.09	880.15	939.72	820.05

[1] Allocations by sex and age class based on 1983 Goodnews District (W-5) commercial catch samples.

Table 51. Goodnews area subsistence catch of chum salmon, age and length (mm) by sex, 1983[1] [2].

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	14	232	344	7	597
PERCENT	0.90	15.30	22.70	0.50	39.40
AV LENGTH	511.50	572.42	610.80	656.00	594.09
FEMALES					
NUMBER	42	415	464	0	921
PERCENT	2.80	27.30	30.50	0.00	60.60
AV LENGTH	514.17	562.92	574.38	0.00	566.47
SEXES COMBINED					
NUMBER	56	647	808	7	1,518
PERCENT	3.70	42.60	53.20	0.50	100.00
AV LENGTH	513.50	566.33	589.89	656.00	577.33

[1] Allocations by sex and age class based on 1983 Goodnews District (W-5) commercial catch samples.

[2] Includes small numbers of sockeye salmon.

Table 52. Goodnews area total harvest of chinook salmon by age and sex, 1983.

	AGE GROUP				
	42	52	62	72	TOTAL
MALES					
NUMBER	2,179	1,159	3,848	162	7,348
PERCENT	14.40	7.60	25.30	1.10	48.40
FEMALES					
NUMBER	24	93	7,417	301	7,835
PERCENT	0.20	0.60	48.80	2.00	51.60
SEXES COMBINED					
NUMBER	2,203	1,252	11,265	463	15,183
PERCENT	14.60	8.20	74.10	3.10	100.00

Table 53. Goodnews area total harvest of chum salmon by age and sex, 1983[1].

	AGE GROUP				
	31	41	51	61	TOTAL
MALES					
NUMBER	77	1,266	1,879	38	3,260
PERCENT	0.90	15.30	22.70	0.50	39.40
FEMALES					
NUMBER	230	2,263	2,531	0	5,024
PERCENT	2.80	27.30	30.50	0.00	60.60
SEXES COMBINED					
NUMBER	307	3,529	4,410	38	8,284
PERCENT	3.70	42.60	53.20	0.50	100.00

[1] Includes small numbers of sockeye and pink salmon.

Table 54. Middle Fork of the Goodnews River daily salmon escapement counts by species, 1983.

Date	Chinook	Sockeye	Chum
6/11	4	3	0
6/12	0	0	0
6/13	0	0	0
6/14	-4	0	0
6/15	0	0	0
6/16	0	3	0
6/17	0	0	0
6/18	0	0	0
6/19	0	0	0
6/20	4	3	0
6/21	14	0	0
6/22	56	0	0
6/23	163	0	0
6/24	104	742	3
6/25	93	489	0
6/26	48	375	31
6/27	18	381	18
6/28	150	243	0
6/29	300	429	153
6/30	457	292	85
7/01	240	447	579
7/02	231	978	633
7/03	99	601	460
7/04	151	1,093	563
7/05	203	1,586	667
7/06	54	1,068	423
7/07	576	1,377	705
7/08	129	1,050	474
7/09	90	1,083	921
7/10	174	1,095	591
7/11	180	1,821	663
7/12	248	1,501	1,115
7/13	231	1,013	607
7/14	60	651	162
7/15	138	921	447
7/16	114	930	420
7/17	102	708	384
7/18	81	804	411
7/19	93	510	414
8/20	141	408	810
8/21	165	564	1,068
8/22	60	312	693
8/23	51	81	222
8/24	78	120	462
8/25	69	84	447
8/26	84	60	423
8/27	33	84	394
8/28	14	61	614
Totals	5,296	23,971	16,062

Table 55. Goodnews River escapement of chinook salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP				
	52	62	72	73	TOTAL
MALES					
NUMBER	1,347	5,696	311	104	7,458
PERCENT	9.40	39.50	2.20	0.70	51.80
AV LENGTH	742.92	913.85	971.67	917.00	885.43
STD ERROR	25.10	10.31	25.87	0.00	13.48
SAMP SIZE	13	55	3	1	72
FEMALES					
NUMBER	311	6,422	207	0	6,940
PERCENT	2.20	44.60	1.40	0.00	48.20
AV LENGTH	783.33	866.40	877.50	0.00	863.01
STD ERROR	28.48	5.84	57.50	0.00	8.40
SAMP SIZE	3	62	2	0	67
SEXES COMBINED					
NUMBER	1,658	12,118	518	104	14,398
PERCENT	11.60	84.10	3.60	0.70	100.00
AV LENGTH	750.50	888.70	934.04	917.00	874.62
STD ERROR	25.73	7.94	38.52	0.00	11.03
SAMP SIZE	16	117	5	1	139

[1] Age, length, and sex data were obtained during spawning ground carcass surveys.

Table 56. Goodnews River escapement of sockeye salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP		
	42	52	TOTAL
MALES			
NUMBER	50,523	7,773	58,296
PERCENT	72.20	11.10	83.30
AV LENGTH	580.62	557.50	577.54
STD ERROR	9.34	22.50	11.09
SAMP SIZE	13	2	15
FEMALES			
NUMBER	3,886	7,773	11,659
PERCENT	5.60	11.10	16.70
AV LENGTH	545.00	557.50	553.33
STD ERROR	0.00	7.50	5.00
SAMP SIZE	1	2	3
SEXES COMBINED			
NUMBER	54,409	15,546	69,955
PERCENT	77.80	22.20	100.00
AV LENGTH	578.08	557.50	573.50
STD ERROR	8.67	15.00	10.08
SAMP SIZE	14	4	18

[1] Age, length, and sex data were obtained during spawning ground carcass surveys.

Table 57. Goodnews River escapement of chum salmon, age and length (mm) by sex, 1983[1].

	AGE GROUP			
	31	41	51	TOTAL
MALES				
NUMBER	136	4,489	8,841	13,466
PERCENT	0.60	19.00	37.30	56.90
AV LENGTH	570.00	594.58	607.54	602.84
STD ERROR	0.00	4.76	4.96	4.84
SAMP SIZE	1	33	65	99
FEMALES				
NUMBER	136	3,672	6,393	10,201
PERCENT	0.60	15.50	27.00	43.10
AV LENGTH	545.00	558.70	575.32	568.93
STD ERROR	0.00	4.22	4.67	4.45
SAMP SIZE	1	27	47	75
SEXES COMBINED				
NUMBER	272	8,161	15,234	23,667
PERCENT	1.20	34.50	64.30	100.00
AV LENGTH	557.50	578.44	594.02	588.23
STD ERROR	0.00	4.52	4.84	4.67
SAMP SIZE	2	60	112	174

[1] Age, length, and sex data were obtained during spawning ground carcass surveys.

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APPENDICES

Appendix Table 1. Aniak sonar 4.25" (11 cm) mesh gillnet samples of chum salmon, age and length (mm) by sex, 1983.

	AGE GROUP	
	51	TOTAL
MALES		
PERCENT	100.00	100.00
AV LENGTH	631.99	631.99
STD ERROR	13.00	13.00
SAMP SIZE	3	3
FEMALES		
PERCENT	0.00	0.00
AV LENGTH	0.00	0.00
STD ERROR	0.00	0.00
SAMP SIZE	0	0
SEXES COMBINED		
PERCENT	100.00	100.00
AV LENGTH	631.99	631.99
STD ERROR	13.00	13.00
SAMP SIZE	3	3

Appendix Table 2. Aniak sonar 5.50" (14 cm) mesh gillnet samples of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP		
	42	52	TOTAL
MALES			
PERCENT	25.00	75.00	100.00
AV LENGTH	510.00	605.67	581.75
STD ERROR	0.00	44.74	33.56
SAMP SIZE	1	3	4
FEMALES			
PERCENT	0.00	0.00	0.00
AV LENGTH	0.00	0.00	0.00
STD ERROR	0.00	0.00	0.00
SAMP SIZE	0	0	0
SEXES COMBINED			
PERCENT	25.00	75.00	100.00
AV LENGTH	510.00	605.67	581.75
STD ERROR	0.00	44.74	33.56
SAMP SIZE	1	3	4

Appendix Table 3. Aniak sonar 5.50" (14 cm) mesh gillnet samples of sockeye salmon, age and length (mm) by sex, 1983.

	AGE GROUP	
	52	TOTAL
MALES		
PERCENT	0.00	0.00
AV LENGTH	0.00	0.00
STD ERROR	0.00	0.00
SAMP SIZE	0	0
FEMALES		
PERCENT	100.00	100.00
AV LENGTH	552.00	552.00
STD ERROR	0.00	0.00
SAMP SIZE	1	1
SEXES COMBINED		
PERCENT	100.00	100.00
AV LENGTH	552.00	552.00
STD ERROR	0.00	0.00
SAMP SIZE	1	1

Appendix Table 4. Aniak sonar 5.50" (14 cm) mesh gillnet samples of chum salmon, age and length (mm) by sex, 1983.

	AGE GROUP		
	41	51	TOTAL
MALES			
PERCENT	5.40	40.50	45.90
AV LENGTH	575.00	607.10	603.32
STD ERROR	14.06	5.60	6.59
SAMP SIZE	4	30	34
FEMALES			
PERCENT	16.20	37.90	54.10
AV LENGTH	556.17	574.79	569.21
STD ERROR	6.50	3.56	4.44
SAMP SIZE	12	28	40
SEXES COMBINED			
PERCENT	21.60	78.40	100.00
AV LENGTH	560.88	591.48	584.87
STD ERROR	8.39	4.61	5.43
SAMP SIZE	16	58	74

Appendix Table 5. Aniak sonar 7.25" (18 cm) mesh gillnet samples of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP	
	72	TOTAL
MALES		
PERCENT	0.00	0.00
AV LENGTH	0.00	0.00
STD ERROR	0.00	0.00
SAMP SIZE	1	1
FEMALES		
PERCENT	100.00	100.00
AV LENGTH	910.00	910.00
STD ERROR	0.00	0.00
SAMP SIZE	1	1
SEXES COMBINED		
PERCENT	100.00	100.00
AV LENGTH	910.00	910.00
STD ERROR	0.00	0.00
SAMP SIZE	1	1

Appendix Table 6. Aniak sonar 7.25" (18 cm) mesh gillnet samples of chum salmon, age and length (mm) by sex, 1983.

	AGE GROUP		
	41	51	TOTAL
MALES			
PERCENT	8.60	88.90	97.50
AV LENGTH	559.57	610.14	605.68
STD ERROR	5.61	2.77	3.03
SAMP SIZE	7	72	79
FEMALES			
PERCENT	0.00	2.50	2.50
AV LENGTH	0.00	592.00	592.00
STD ERROR	0.00	28.00	28.00
SAMP SIZE	0	2	2
SEXES COMBINED			
PERCENT	8.60	91.40	100.00
AV LENGTH	559.57	609.64	605.34
STD ERROR	5.61	3.46	3.64
SAMP SIZE	7	74	81

Appendix Table 7. Aniak sonar 8.50" (22 cm) mesh gillnet samples of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP		
	62	72	TOTAL
MALES			
PERCENT	0.00	0.00	0.00
AV LENGTH	0.00	0.00	0.00
STD ERROR	0.00	0.00	0.00
SAMP SIZE	0	0	0
FEMALES			
PERCENT	66.70	33.30	100.00
AV LENGTH	857.50	925.00	880.00
STD ERROR	3.54	0.00	39.05
SAMP SIZE	2	1	3
SEXES COMBINED			
PERCENT	66.70	33.30	100.00
AV LENGTH	857.50	925.00	880.00
STD ERROR	3.54	0.00	39.05
SAMP SIZE	2	1	3

Appendix Table 8. Aniak sonar 8.50" (22 cm) mesh gillnet samples of chum salmon, age and length (mm) by sex, 1983.

	AGE GROUP	
	51	TOTAL
MALES		
PERCENT	100.00	100.00
AV LENGTH	612.76	612.76
STD ERROR	4.84	4.84
SAMP SIZE	21	21
FEMALES		
PERCENT	0.00	0.00
AV LENGTH	0.00	0.00
STD ERROR	0.00	0.00
SAMP SIZE	0	0
SEXES COMBINED		
PERCENT	100.00	100.00
AV LENGTH	612.76	612.76
STD ERROR	4.84	4.84
SAMP SIZE	21	21

Appendix Table 9. Kwegooyuk test fish 5.50" (14 cm) mesh gillnet samples of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP						
	32	42	52	62	72	73	TOTAL
MALES							
PERCENT	1.00	52.80	16.10	8.90	0.00	0.00	78.80
AV LENGTH	488.33	551.44	667.98	862.31	0.00	0.00	609.56
STD ERROR	33.21	3.39	9.97	14.57	0.00	0.00	6.39
SAMP SIZE	3	154	47	26	0	0	230
FEMALES							
PERCENT	.30	6.80	5.10	8.00	.70	.30	21.20
AV LENGTH	480.00	543.75	712.00	823.35	855.00	790.00	702.59
STD ERROR	0.00	8.48	18.44	11.94	30.00	0.00	12.60
SAMP SIZE	1	20	15	23	2	1	62
SEXES COMBINED							
PERCENT	1.30	59.60	21.20	16.90	.70	.30	100.00
AV LENGTH	486.41	550.56	678.57	843.87	855.00	790.00	629.28
STD ERROR	24.91	3.98	12.02	13.33	30.00	0.00	7.71
SAMP SIZE	4	174	62	49	2	1	292

Appendix Table 10. Kwegooyuk test fish 8.50" (22 cm) mesh samples of chinook salmon, age and length (mm) by sex, 1983.

	AGE GROUP						
	42	52	62	63	72	73	TOTAL
MALES							
PERCENT	1.80	5.60	36.90	0.00	1.30	0.00	45.60
AV LENGTH	559.33	762.42	872.33	0.00	923.89	0.00	847.95
STD ERROR	17.33	11.39	3.70	0.00	16.13	0.00	5.55
SAMP SIZE	12	38	249	0	9	0	308
FEMALES							
PERCENT	.40	5.30	45.10	.10	2.80	.70	54.40
AV LENGTH	580.00	803.47	865.71	730.00	909.47	832.00	859.11
STD ERROR	11.55	10.85	2.64	0.00	14.12	22.39	4.37
SAMP SIZE	3	36	304	1	19	5	368
SEXES COMBINED							
PERCENT	2.20	10.90	82.00	.10	4.10	.70	100.00
AV LENGTH	563.09	782.38	868.69	730.00	914.04	832.00	854.02
STD ERROR	16.18	11.13	3.12	0.00	14.76	22.39	4.90
SAMP SIZE	15	74	553	1	28	5	676

Appendix Table 11. Kogrukluk River escapement of sockeye salmon, age and length (mm) by sex, 1982[1] [2].

	AGE GROUP								
	31	32	41	42	52	53	62	63	TOTAL
MALES									
NUMBER	99	99	1,581	296	10,374	0	0	395	12,844
PERCENT	0.50	0.50	7.70	1.40	50.20	0.00	0.00	1.90	62.20
AV LENGTH	545.00	380.00	587.12	542.00	584.75	0.00	0.00	581.50	582.07
STD ERROR	0.00	0.00	6.23	6.93	2.27	0.00	0.00	8.51	3.02
SAMP SIZE	1	1	16	3	105	0	0	4	130
FEMALES									
NUMBER	99	0	692	1,581	4,939	99	395	0	7,805
PERCENT	0.50	0.00	3.30	7.70	23.90	0.50	1.90	0.00	37.80
AV LENGTH	510.00	0.00	560.29	527.19	557.12	537.00	581.00	0.00	551.69
STD ERROR	0.00	0.00	4.29	4.21	2.52	0.00	6.24	0.00	3.15
SAMP SIZE	1	0	7	16	50	1	4	0	79
SEXES COMBINED									
NUMBER	198	99	2,273	1,877	15,313	99	395	395	20,649
PERCENT	1.00	0.50	11.00	9.10	74.10	0.50	1.90	1.90	100.00
AV LENGTH	527.50	380.00	578.95	529.53	575.84	537.00	581.00	581.50	570.59
STD ERROR	0.00	0.00	5.64	4.64	2.35	0.00	6.24	8.51	3.07
SAMP SIZE	2	1	23	19	155	1	4	4	209

[1] Lengths were collected and are reported as rear-orbit to fork of tail.

[2] This table is a corrected version, and should replace the corresponding table in the 1982 Kuskokwim Catch and escapement leaflet (ADF&G Technical Data Report No. 111).

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